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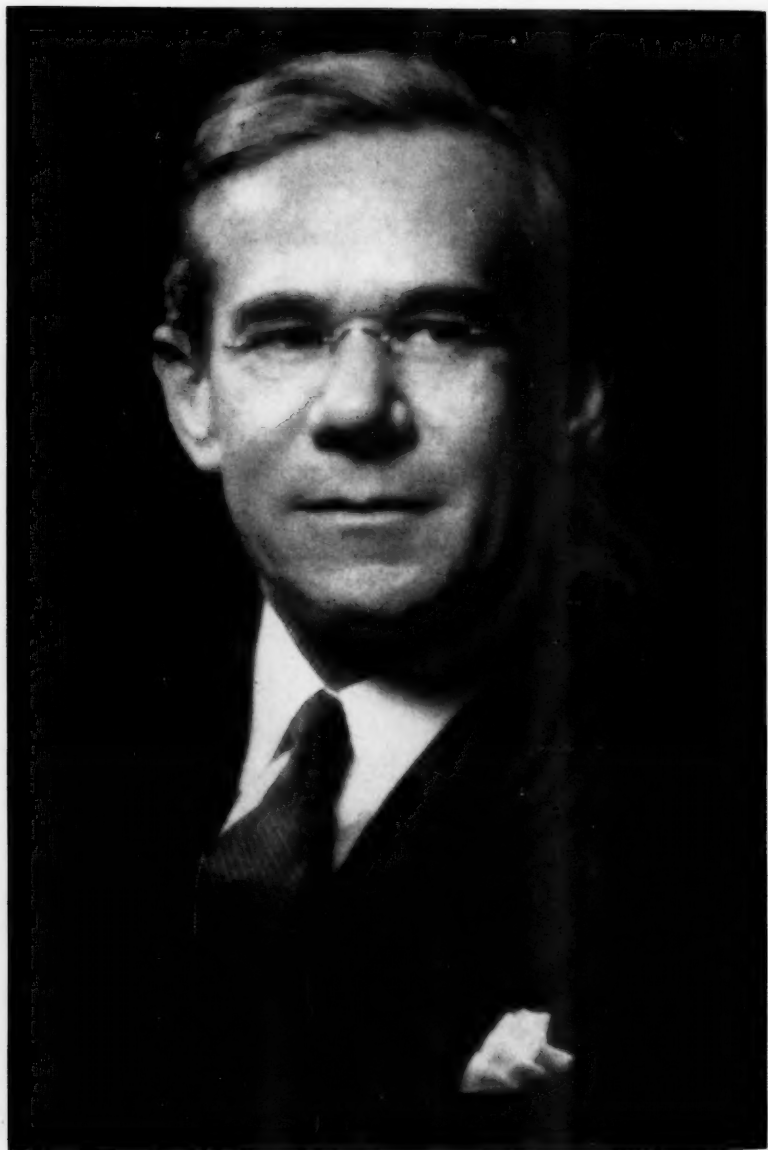
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MODERN PSYCHIATRY AND MENTAL HEALING.

By GEORGE H. KIRBY, M. D., NEW YORK CITY.

Glancing back over the outstanding developments in the field of mental medicine during the 35 years which have elapsed since my introduction into psychiatry, through a happy association with Dr. Adolf Meyer at the Worcester State Hospital, I find that I have witnessed and, to some small extent perhaps, participated in what I consider to have been two noteworthy advances in the domain of psychiatry. Both of these events have to do with the etiology and treatment of mental illness and are therefore of special interest to us, as it is toward finding causes and devising effective therapy that all of our clinical studies and research efforts are in the last analysis directed.

These two events which exemplify progress along quite divergent lines of medical thought and research will serve to illustrate the main theses of my address this morning, namely, the necessity for a multilateral approach to the problems of psychiatry as we perceive them today, and, secondly, that the basis for a future development in scientific methods and principles of psychiatric *treatment* must be found in the conception of the individual as a psycho-somatic unity and in the successful integration of psychiatry with all branches of medicine.

The first event to which I refer as marking a major step in the progress of psychiatry was the discovery in 1913 by Moore and Noguchi of the *spirochetæ pallidum* as the cause of general paresis, a disease which for over 100 years had been described and studied, but its cause had remained unknown; subsequently in 1917 came the demonstration by Wagner-Jauregg of the efficacy of induced malaria fever in the treatment of this disease and still later the additional therapeutic value of certain arsenical compounds, either alone or in combination with fever, was shown to exist.

* Delivered at the ninetieth annual meeting of The American Psychiatric Association, New York City, May 28-June 1, 1934.

The discovery of a germ as a cause of general paresis was widely acclaimed and quickly accepted as a scientifically proven fact; also the curative effect of fever was hailed enthusiastically by the medical profession and the procedure was quickly adopted in practise. The cause and the cure harmonized well with current medical conceptions of etiology and pathology and therapy of disease. The relationships were direct, objective and easily understood. Wagner-Jauregg was awarded the Nobel prize for his therapeutic discovery. Again, hopes were stimulated that probably other mental disorders would be accounted for by infections, poisons, or biochemical and metabolic disturbances of some kind.

The second event marking a great forward step in psychiatry was of a totally different nature; in contrast to the first it was not a clear-cut discovery which fulfilled the requirements of orthodox medicine; it was a conception of slow growth built upon empirical observation; it had its roots in earlier ages but it is only in our times that it has been clearly formulated as a problem in medicine, and one which demands serious study and scientific testing because of its important and far reaching implications throughout the whole range of medical practise. I refer to the gradual emergence of the conception that psychic or emotional causes can produce not only mental illness but that these causes are also capable of producing a great variety of functional disturbances and physical symptoms; and possibly also capable of inducing organic or structural changes in various organs and systems of the body.

We may call this the "*psychogenic concept*" in medicine. Hand in hand with the psychogenic viewpoint there has developed a deep and wide-spread interest in treatment of various forms of illness by mental methods, that is by *psychotherapy*. It is particularly to developments in the field of psychotherapy and to its present position as a recognized form of treatment, within the realm of legitimate medicine, that I wish to address myself today.

In contrast to the readiness with which the discovery of the cause and treatment of general paresis was accepted by the medical profession we find that at the beginning of this century there was deeply rooted opposition to the idea that psychic causes could induce illness, either mental or physical, or that illness could be ameliorated or cured by psychotherapy. Such an idea was generally repugnant to the then current medical thought; it did not

harmonize with the prevailing physico-chemical conception of disease as it had been crystallized by the brilliant achievements of the clinicians, pathologists, bacteriologists, and chemists of the latter part of the 19th century.

Psychiatry during this period hardly had any contacts with other branches of science and as far as general medicine was concerned, psychiatry occupied the unfavorable position of almost complete isolation, while psychiatric education in the medical schools was almost non-existent.

As an illustration of the remarkable change which in recent years has taken place in the relationship between psychiatry and general medicine I can recall that 25 or 30 years ago when we spoke, as we often did, of the desirability of psychiatry and general medicine drawing closer together, we had in mind mainly the hope that general medicine through its methods and techniques would help us in gaining an understanding of the nature and causes, and eventually the treatment of some of the common forms of mental disorder, particularly those severe types requiring hospitalization.

While this hope still exists, it has gradually taken a more subordinate position due to the fact that it is now widely appreciated that a large proportion of all patients encountered in the general practise of medicine present psychiatric problems. These problems are met with not only in the vast army of obviously psychoneurotic individuals whose fears and conflicts are translated into physical complaints and localized in various parts of the body, but they are also encountered in large numbers of patients suffering from definite and often severe subjective symptoms associated with physiological disturbances in one or more organs or systems of the body; however, on careful study these patients are found not to present any objective or organic pathological condition, that is, no structural changes are demonstrable in the organs whose functions are disturbed. These so-called functional disorders are spread thickly throughout every department of medicine and surgery but they are particularly prevalent in the gastro-intestinal, cardiac, gynecological, urological, metabolic, and asthma clinics.

The late Dr. Peabody, of Boston, an able internist with psychiatric insight, dealt in a most illuminating manner with these disorders under the designation of "patients who have nothing the matter with them." He showed that the interest of the physician

usually extended only to the point of establishing the fact that no organic disease was present. Instead of being "too scientific" as the modern physician is often accused of being, he fails in these situations because he is not scientific enough. He is contented with a half truth and is unscientific in the extreme when he stops short of even an attempt to determine the real cause of the symptoms. It is narrow minded to limit one's interest to disturbances of function which are based on anatomic abnormalities.¹ Reliable statistics indicate that from 40 to 60 per cent of the run of cases in general medical and specialty clinics, excluding the acute infections, present conditions which, after careful study, must be classed as essentially functional in nature—that is, without an organic basis. It is probable that a large proportion of these cases belong in the psychoneurotic groups.

From a study of the literature it is apparent that during the past few years more and more attention has been directed to the psychological aspects of these functional disturbances. A considerable body of knowledge has been accumulated and empirical observation leads to the conclusion that physiologic activity of any organ or system may be upset directly or indirectly by emotional stimuli; disturbance of function and symptoms result which may be interpreted as somatic abnormality but the symptoms disappear as the emotional cause passes.

Another important group of cases has of late attracted psychiatric attention. These are cases in which psychogenic factors apparently play a leading rôle in producing somatic reactions which sooner or later involve organic changes. Such conditions are hyperthyroidism, peptic ulcer, cardiospasm, essential hypertension, ulcerative colitis, diabetes, etc. An emotional glycosuria is described and variations in the symptoms of diabetes have been shown to occur in response to emotional stress, so that it seems actually possible in some cases to measure the degree of emotional reaction in terms so tangible as grams of sugar.² The profound influence which the emotions are capable of exerting on gastric and intestinal motility can be objectively demonstrated by fluoroscopic and x-ray studies. It is of interest to note that an important series of papers will

¹ Francis Peabody: *Jour. Amer. Med. Assoc.*, March 19, 1927.

² R. T. Woodyatt: *Jour. Amer. Med. Assoc.*, September 24, 1927.

be presented here this afternoon dealing with the psychiatric aspects of medical problems in toxic goitre, gastro-intestinal disorders, and cardiovascular disturbances. These contributions come jointly from the departments of medicine and psychiatry of Columbia University and the Psychiatric Institute and are a reflection of the widening interest in the study of psychosomatic relationships.

The psychogenic viewpoint in medicine has served to raise serious doubts as to whether we have as yet achieved a complete picture of many diseases. The necessity of viewing disease in its complete cycle is more and more realized; the initial stages of illness must be studied as closely as are the more pronounced and later stages. Even preventive medicine and periodic health examinations have not accomplished a great deal toward ridding physicians of the traditional idea that a person is not really sick unless some physical alteration or demonstrable pathology is present. The psychiatric study of various diseases of obscure etiology has, however, given additional strong support to the theory that sustained alteration in function may lead eventually to organic change.

The sequence of events in a pancreatic diabetes furnishes an illustration: an original emotional stress puts a tax on the thyroid gland, a burden is thrown on the suprarenals which become exhausted in an effort to equilibrate sugar metabolism until pancreatic insufficiency expresses itself as a persistent hyperglycemia. A permanent physical condition is thus established through several intermediate steps and the initial factor of emotional stress may be easily lost sight of.³

A study of the now neglected earliest stages of disease and the emotional life and personality reactions of the individual will I believe, permit us to gradually grasp the importance of the psychogenic or preorganic phases of many forms of illness and thus obtain a better understanding of the complete cycle of the disease and of its etiology.

The interaction of body mind has never received thorough realistic and scientific treatment. The failure to recognize psychological causes at an early stage is just as grave an error as to fail to recognize an infective process or a surgical anomaly.⁴

³ Emanuel Miller: *Modern Psychotherapy*. Pub. Jonathan Cape, London.

⁴ Trotter: Quoted by Miller in *Modern Psychotherapy*.

Turning now to a consideration of psychiatric methods of treatment we find that psychiatry of today makes use of only one important principle which is not included in the regular training and equipment of physicians for general practise. Psychiatric methods of treatment with the single exception of psychotherapy, correspond almost entirely to those of general medicine. But the application of the methods of general medicine and surgery to psychiatry are as disappointing today as they have been for so long a time in the past. By these methods we can influence a mental patient's general condition and treat accompanying physical disease which, to be sure, are matters of prime importance and should never be neglected, but we do not expect thereby to directly effect a cure.

Notwithstanding, waves of interest and exaggerated claims for various drugs, glandular products, vaccines, elimination of infection, surgical operations, etc., the fact remains that we know of no chemical agents, biological products, physical procedures or surgical measures of proven curative value in psychiatric disorders with the single exception of general paresis and small groups of cases associated with thyroid deficiency or due to focal brain lesions.

On the other hand the treatment of mental disorders has advanced tremendously along psychotherapeutic lines during the past 35 years. The result is that psychotherapy is now our most valuable asset in the treatment of many forms of mental illness; it is also our main dependence in the management of the great variety of conduct disorders and personality difficulties which come under the care of the psychiatrist. Of great importance is the fact that the value of psychotherapy in many general medical diseases is slowly winning recognition as the psychic factor in the causation of these diseases is being accepted and incorporated in the body of medical knowledge and practise.

It is not my intention to trace the origins of psychotherapy back to the religious and magical healing practices of ancient peoples. This has been done many times and the fact established that in every age and amongst all races various forms of mental healing were practised with success. It is without doubt the oldest therapeutic measure used by mankind; concealed within it has lain a valuable, but secret, principle which has been handed down to us through the ages. And so it is that mental healing in the 20th

century goes on, as it has in some form, from the beginning of recorded history. Its methods are different but the forces which it utilizes are the same as those which the ancients employed in their crude way. But what is of vastly more importance to us is the fact that mental healing is now, in our age, being gradually divested of its supernatural and mysterious aspects; its basic truths and principles are being slowly unfolded with the result that psychotherapy is being brought gradually into the domain of scientific medicine.

The foundations for the development of modern psychotherapy began to take form during the first half of the 19th century at the time when the French and English schools of medicine commenced to show a dim appreciation of the fact that the phenomena of suggestion and hypnotism depended not on a magnetic fluid or other physical agencies but were to be explained on purely psychological principles.

It is of interest to note that it was just 90 years ago corresponding to the time of the founding of our Association, that a clearly expressed psychological conception of the phenomena of suggestion was formulated; this was an event of great importance as it marks the beginning of a science of psychopathology on basis of which all modern psychotherapy has evolved.

It was not until the later work of Charcot, Bernheim and Janet that it was made still clearer that the mind could produce symptoms of disease and that these symptoms could be removed by mental suggestion.

A tremendous advance was scored in the demonstration that not only the mental but also the physical symptoms of hysteria depended on "ideas" or emotional systems or complexes which were split off from the stream of conscious thought or memory.

The question as to *why* the splitting off took place and through what mechanisms could mental forces act to produce symptoms and abnormal behavior remained unanswered. Psychopathology having advanced thus far was now ready for the next big step; this came with the formulation of a dynamic conception to account for the psychic forces and mechanisms which underlay symptom formation and behavior disorders; then came the further important step which was the gradual extension of the dynamic conception into the field of general psychology as a theory to account for the

forces and mechanisms which motivate human conduct in general. The work of Sigmund Freud furnished the foundation for the development of a dynamic psychology or as it has been called an instinct-psychology; a psychology which found in the instincts the driving forces capable of explaining the activity of man. Starting from a study of the psychoneuroses Freud developed during the past 35 years the vast superstructure of psychoanalytic doctrine which at present comprises: (1) a method of studying psychic processes; (2) a theory of the human personality and (3) a psychotherapeutic technique.

Coincident with the early period of development of the psychoanalytic doctrine by Freud and his pupils, an equally important psychodynamic viewpoint was developing in psychiatry in this country under the leadership of Adolf Meyer. Based on a study of the psychoses, especially schizophrenia, Meyer formulated his objective psychology or psychobiology which deals with the functions of the total personality or the completely integrated person as opposed to physiological function of separate parts or systems. Mental disorder according to this conception represents a disturbance in the balance of forces which blend to form the personality reactions; it has to do with abnormal or unhealthy ways in the instinctive-emotional life and the attitudes of the person rather than with a disorder of any special organ. In the individual patient the facts of development, life experiences, habits, emotional attitudes, and somatic disturbances will, when completely revealed, account for the mental disorder and point the way for a constructive therapeutic handling.

It is not my intention to discuss the relative merits of the various schools of psychopathology. I have commented briefly on the Freudian and Meyerian conceptions because they have exercised the most profound influence on psychiatric thought and seem to hold the greatest promise for future developments in psychotherapy. All other schools or special groups which have cropped up to urge their different formulations, often with bitter controversy, can be considered as secondary to the psychoanalytic and psychobiological or as variants which do not contribute any essentially new principles.

While we may dwell on various points of divergence between these two conceptions, it is, I believe, more important to realize

that they both represent a swing in the same direction and that they reveal significant points of agreement in fundamental principles. For example, they are both psycho-dynamic in foundation, both are biologically orientated in a theory of human personality and both are in agreement in a conception of the psycho-somatic-unity of the individual. On the other hand there are differences in methods, in interpretations, and in the emphasis placed on various dynamic factors, for instance, infantile sexuality.

In the field of psychotherapy there is, as I shall presently show, a noteworthy confluence of analytic and psychobiological principles, which is already of great practical value and which, to my mind, is indicative of the direction of future developments in mental therapy.

Psychotherapy, in the narrower sense, includes any form of healing which has for its object treatment of disease by mental influence. During recent years corresponding to the advance of psychiatry and mental hygiene there has been a tremendous expansion in the scope and practise of psychotherapy. Thirty-five years ago few physicians were engaged exclusively in the practise of this type of treatment, whereas now a great many are specializing in psychotherapy, and also, unfortunately, an enormous number of lay persons, irregulars and unqualified individuals are attempting to carry on various forms of mental healing. Crookshank has spoken of the "psycho-therapeutic revolution" of the 20th century and there is no doubt but that the developments in this field since 1900 will mark a new era in the progress of psychological medicine. This movement has come about mainly as a result of the better understanding of the psychogenic factors in disease and the gradual emergence of a body of psychopathological principles, without which no scientific psychotherapy can develop.

Psychotherapy was formerly used chiefly in the treatment of the psychoneuroses, but gradually its usefulness in the treatment of other forms of mental disorders became apparent, and more recently its value in the psychic and emotional problems of general medical and surgical cases has begun to be recognized. But an even wider field of application for psychotherapy has developed in the management of personality disorders, behavior problems and the various groups of socially maladjusted individuals who are not considered to be "sick" in the usual sense of the word.

The mere enumeration of the various agencies and activities, outside of hospital and medical clinics, where the problems of treatment are approached mainly if not exclusively from the psychotherapeutic standpoint, makes an impressive list. The most important among these are: Child Guidance Clinics and other agencies dealing with the child-parent relationships; Mental Hygiene Departments in schools and colleges; Institutes of Human Relations; Educational and Social Adjustment Clinics; University Psychological Clinics; welfare and Relief organizations; Court Clinics; Prison Clinics; Advice Clinics in churches and other religious organizations; Personnel Clinics in industrial and business organizations, etc.

Not all of these activities are under medical guidance and in many of them the psychiatric work is as yet poorly organized or inadequately directed. To help shape future developments of psychotherapy along sound lines in these various activities is a most important medical and psychiatric problem and one in which a large amount of public education will be necessary.

The psychotherapy that came down to us from former times was mostly unorganized and unconsciously practised. Even today physicians carry on a great deal of psychotherapy at this level. Many are not consciously aware of how strongly they influence their patients for better or for worse by their own personality and their sick-room manners, by the interest they take in certain symptoms, by the smell and color of their medicines, by use of mechanical devices and physical agencies, by the discipline and atmosphere of the hospital, the attitude of the nurses, etc.

Progress in modern psychiatry has been toward recognizing these various factors, simple as they may seem, and bringing them in line with established psychopathological principles in order that the physician may know what he is doing and begin to understand the reciprocal relationships between his mind and the patient's mind.

Organized and consciously applied psychotherapy of the present time is associated with a variety of methods and techniques. These however, fall into two main groups; the *first* depends chiefly on the influence of so-called suggestion, while the *second* utilizes some form of mental analysis, although here also suggestion apparently plays an important rôle. In the first group are found such proce-

dures as suggestion in hypnotic or waking states, persuasion, re-education, progressive relaxation, discipline, isolation, rest, etc. In the second group fall (1) the method of personality analysis and psychiatric interview as developed by Adolf Meyer; (2) the psychoanalytic technique of Freud; (3) other methods which are variants or modifications of the psychoanalytic.

It is not necessary to comment on these various methods, the details of which are well known to all. They are not sharply differentiated or specific forms of treatment as the adherents of various methods would have one believe. The basic point in all psychotherapy is the objectively demonstrable fact that the human organism is amenable to mental influences. This may be accomplished in a variety of ways, through various agencies and different techniques. However, as knowledge developed it seemed possible to point to a common factor or principle running through the various forms of mental therapy. In all psychotherapy there seemed to be operating an influence or force which came to be known as "*suggestion*." Just what the nature of this force was or how it worked was not known. In all forms of preanalytic therapy it was admittedly a most essential factor and even in analytic therapy it was felt to play an important rôle.

The early crude conceptions of suggestion connected it with a mysterious power by which one individual could dominate another (hypnotism), or regarded it as an obscure force which a strong personality could wield to implant ideas or to remove ideas from the mind of another person and thus influence behavior, modify attitudes or eliminate symptoms of illness if due to mental causes.

Psychoanalytic study of these obscure relationships between patient and physician has revealed a general principle which affords us at least a working hypothesis to explain the nature of the influences and forces at work in these relationships. This explanation has been formulated in the Freudian conception of "*transference*" or "*rapport*." Transference is the expression of an affective reaction between patient and doctor—a transfer of feeling which represents, as pointed out by Peck, an apparent universal human need to establish emotional bonds of dependence on other people.⁵ The Freudian teaching relates this to a continued activity of the infan-

⁵ Martin Peck: New England Jour. of Medicine, January 25, 1934.

tile emotional reactions of child to parent ; in the adult the reactions reappear from the unconscious and constitute the dynamic factor in the transference situation.

The appearance of a negative aspect to the transference means that the patient is reproducing the resentment, stubbornness and hostile feelings of the child to the parent. Formerly this was not understood, and when it made its appearance the therapeutic relationship ended with failure of treatment. It was believed that the physician lacked the personality or the force to sufficiently impress the patient and guide him through a plan of treatment.

The recognition of "rapport" or "transference" as a therapeutic measure has tended to dignify the practice of psychotherapy and free it to a considerable extent from the cloud of mysticism and superstition with which general medicine has always associated it. The refusal of physicians to take seriously the curative value of emotional relationships in psychotherapy has left a large field for irregulars and quacks.

The significance of the transference conception lies in its applicability to all forms of psychotherapy: it shows that the power for mental healing resides in the interplay of emotional forces between patient and physician; it lays the foundation for all forms of "affective therapy"—suggestion, persuasion, reeducation, etc.; it paves the way for therapeutic action and reconstruction based on personality analysis and the psychiatric interview as used in the psychobiological approach; and it leads on to the deeper analysis of the unconscious and resolution of conflict through the Freudian technique.

The position of psychoanalysis in the field of mental therapy is a topic which has been heatedly discussed on many occasions. On account of the widespread interest in psychoanalysis and its appeal to the popular mind, there is a tendency on the part of the public to think of it as the only worthy and scientific form of psychotherapy in existence today. I have often heard analysts belittle all other forms of mental therapy and sometimes even refer to them as not only useless but as actually pernicious. The truth is that psychoanalysis has no monopoly in the field of mental therapy and has by no means eliminated other modes of mental treatment. In fact, it has served to strengthen those that are honest and legitimate

by adding to our knowledge and explaining the underlying principles and forces at work in various other forms of psychotherapy. It is obvious to all students of psychopathology and psychiatry that psychoanalysis has exercised a tremendous influence on all modern methods of psychotherapy but, paradoxical as it may seem, psychoanalysis does not in itself constitute a therapeutic technique of wide application. The actual limitations of psychoanalysis in practice are well known: in selecting cases for this form of therapy one must always consider the age of the patient, the intellectual equipment, the personality make-up and capacity for self-help, the life situation in which opportunities and possibilities must still exist for achievement and obtaining of some normal satisfactions, and last but not least is the question of the time and expense involved in a course of treatment. Psychoanalysis as a therapeutic measure will find its most suitable subjects in a selected group of psychoneurotics; it will prove to be of special value in reaching the material of the deep unconscious to which levels other simpler methods fail to penetrate.

Psychoanalysis has, on the other hand, as a method of investigation and research, made contributions of inestimable value to psychopathology; it has discovered and made available for psychiatry a large body of scientific knowledge regarding the biological forces which shape personality reactions and the mental mechanisms concerned in symptom formation.

It is recognized by everyone that psychoanalysis has also enriched all forms of mental therapy. But it must be acknowledged that by far the most extensive activities in the field of organized psychotherapy today are based on the psychobiological approach of Meyer as carried out in psychiatric hospitals, outpatient departments, mental hygiene clinics and in private practice. Here are utilized the anamnesis, personality study and the psychiatric interview, into which have been incorporated various psychoanalytic concepts explanatory of the dynamic factors and mechanisms of symptom formation. This method reaches the largest number of patients and in my opinion gives results on a scale not attained by any other psychotherapeutic method. It forms a solid foundation for constructive advice and guidance for psychotic patients after improvement or recovery; accumulating experience indicates its usefulness

in borderland cases, incipient psychoses, in the milder affective disorders and certain types of schizophrenia; it is an effective method for dealing with a great many types of neurotic reactions especially where the conflicts are preconscious or dependent on situational causes, sudden frustrations, acute psychic trauma, etc.; it is the basis for handling behavior disorders in child-parent clinics; it is the recognized approach in dealing with the large number of personality adjustment cases and emotional problems which are treated in psychiatric and mental hygiene clinics.

It is thus obvious that the *psychobiological approach which utilizes psychoanalytic principles* is the method of mental therapy most widely practiced today and it is indeed our main reliance throughout the entire field of psychiatry.

The relation of psychoanalysis to psychiatry is not a topic that falls within the scope of my address. It will be ably discussed tomorrow at the joint meeting of this Association with the Section on Psychoanalysis.

However, I would like to say a few words on this subject because of the important questions it raises regarding the practise of psychotherapy.

Alexander and other analysts have sought to show that psychoanalysis has more important and more fundamental connections with other branches of science than with medicine or psychiatry. They look upon psychoanalysis as occupying a more exalted position as a basic science of the mind, one which will ultimately furnish knowledge on which a future psychiatry will be built. To many this seems rather strange in view of the fact that psychoanalysis originated from knowledge developed during the treatment of mentally sick persons and practically all of its important later contributions have been made by physicians with psychiatric training working on clinical case-material. This desire to keep psychoanalysis separate from medicine as a special science or cult and at the same time to encourage lay people to treat patients by analytic methods has done much to create suspicion in the medical profession and to arouse resistance against psychoanalytic doctrine.

We have witnessed in recent years an ever-increasing invasion in the field of psychotherapy by lay analysts, by psychologists with a smattering of analytic knowledge, by social service workers who have taken a course in analysis and various other persons poorly

equipped and untrained yet confident that they are qualified for the serious and difficult task of attempting to treat sick persons by analytic methods.

In certain circles of the intelligensia psychoanalysis is apparently treated as a pastime or plaything while the stage and the press feature it extensively. Prinzhorn has warned against the danger of irresponsible experimenting by those who, unsure of themselves, love with their analyzing to play the vampire to other minds. A similar note was sounded in a recent editorial in a leading medical publication on the occasion of the twenty-fifth anniversary of the Mental Hygiene movement.⁶ It said: "After a quarter of a century of growth and change, it is time to re-examine and strengthen the foundations of the mental hygiene movement. The parlor psychologist, like the parlor socialist, has had his day. Lecturers and writers who disguise the pill of serious facts with a spicy coating of sensationalism must give way to qualified psychiatrists to whom psychopathology is a scientific study rather than a remunerative way of titillating suburban ladies."

Professional psychologists and other groups of unqualified persons not only attempt to carry on clinical work and treatment of mental patients, but they do not hesitate to style themselves "psychoanalysts" or "psychiatrists." The general public is confused as to where psychiatry belongs and tends to associate it less with medicine than with psychology.

Medical schools and psychiatric hospitals are flooded with requests from non-medical persons who wish to take "courses in psychiatry." They fail to realize that psychiatry is a branch of medicine and cannot be safely practised without a general medical training any more than can brain surgery or pediatrics. The invasion of the field of psychiatry has by no means been restricted to the uncultured classes. Some of the worst offenders occupy responsible positions in university departments of education or psychology. It is difficult to see how a professor of psychology could feel himself qualified to write a monograph on the causes and treatment of manic-depressive psychoses, or another write a treatise on the psychoneuroses, or still another write on schizophrenia!

⁶ New York Medical Week; May 20, 1933.

These are not works on experimental psychology or abnormal psychology, but are put out as clinical studies which go to the length of dealing with etiology and treatment.

Fortunately some corrective and stabilizing influences have been at work. For sometime the American Psychoanalytic Association has sought to develop closer relations with psychiatry by arranging joint meetings with our organization and last year we established a section on psychoanalysis in this Association. For the consummation of this important step we owe thanks to the recognized leader of the psychoanalytic movement in America, Dr. A. A. Brill. The views which Dr. Brill entertains on the question under discussion are well expressed in his own words as follows:

Psychoanalysis had its inception in psychiatry; all its exponents came from this field. Only trained psychiatrists are capable of becoming efficient psychoanalysts. The progress of psychoanalysis in this country which exceeds by far everything done in this field elsewhere, is due in no small part to the American Psychiatric Association which has always been most sympathetic to my missionary work in psychoanalysis.⁷

Our Association will, I am sure heartily endorse Dr. Brill's stand on this question and lend its co-operation in establishing the principle that a training in psychiatry should be an essential requirement for those who undertake to practice mental therapy according to the psychoanalytic doctrine.

Instead of psychiatry being pushed into an inferior position by psychoanalysis, I look for a continuation of what is now taking place; namely, an absorption into psychiatry of analytic principles which will still further stimulate and quicken psychiatric methods of investigation and treatment. Our goal should be to draw psychiatry and psychoanalysis into closer relationships and to identify them both more positively with the practise of medicine. This is the first step toward freeing the field of mental medicine from unqualified and unscrupulous persons who are attempting to deal with disorders which they are not capable of understanding or treating.

Just as psychiatry has been influenced by psychoanalysis so I believe will the therapeutic technique of analysis be modified by increasing psychiatric knowledge and improved methods. Already

⁷ Introductory Remarks by the Chairman, Section of Psychoanalysis, American Psychiatric Association, May 30, 1934.

the limits of the "orthodox analysis" in case work are recognized and need is felt for what analysts themselves call a "modified technique." I believe that psychoanalysis has been burdened by too much formalism, too much dogmatism, and too much appearance of cultism. The rigidity and ritualism which it now uses in therapeutic technique represent a phase which I believe will gradually pass away.

Medical education has so far taken very little notice of the important developments in the field of psychotherapy. As far as I can ascertain not a single medical school in this country gives any systematic courses in psychotherapeutics. At most there is some brief instruction in connection with the work in general psychiatry or in the presentation of the psychoneuroses. It is hoped that the conferences on Psychiatric Education now being conducted under the auspices of this Association and the National Committee for Mental Hygiene will give consideration to this important subject. The great body of physicians will never become sensitized to the significance of the psychiatric approach in medicine or grasp the fundamentals of psychotherapy until more adequate provisions are made in the medical curriculum.

The era of the exclusive somatic medicine seems to be drawing to a close and as I have already shown, a distinct drift is now noticeable toward a psycho-somatic conception of disease. Psychiatry has an important rôle to play in this movement—a movement in which the *sick person*, as well as his individual organs, will receive attention. The famous declaration made by Virchow at the Congress in Rome over 50 years ago no longer dominates medical thought. On that occasion he said: "There are no general diseases. From now on we shall recognize only diseases of organs and cells." Psychobiology has rendered Virchow's dictum absolutely obsolete. Psychiatry is, I believe, destined to exercise a great humanizing influence in the practise of medicine through the emphasis which it places on the study of human emotions and human relationships. Under the influence of psychiatry the medicine of the future will extend its interests more and more beyond the laboratory, the microscope, the test-tube and the individual organs of the patient and will include in its survey the larger problems of human distress, emotional maladjustments and personality disorders of all types. This enlargement of the field of medicine will

come as a natural result of studying and treating the physically or emotionally sick individual as a psycho-somatic unity.

The field and opportunities for the practise of psychotherapy have expanded so rapidly that it is not surprising that there should be confusion and questioning as to whom should be permitted to work in this domain. The conservatism of medicine and its lingering prejudices against all forms of mental therapy have left much of the field to be exploited by non-medical practitioners. The psychiatric approach in medicine is, however, beginning to make itself felt and, I believe, that physicians properly trained and qualified for psychiatric work will be more and more attracted to the field of mental medicine. Psychotherapy is destined to enjoy a still greater development but in the future it must be put in safer and more experienced hands. To help bring this about is one of the opportunities and responsibilities of our Association.

GEORGE H. KIRBY, M. D.,

PRESIDENT 1933-1934.

A BIOGRAPHICAL SKETCH.

By MORTIMER W. RAYNOR.

Dr. George H. Kirby for many years has been an outstanding figure in the scientific and psychiatric field and his distinguished services in the State of New York for 29 years are well known.

Dr. Kirby began his psychiatric work in 1899 when at the invitation of Dr. Adolf Meyer he joined the staff of the Worcester State Hospital, Massachusetts. In 1902 when Dr. Meyer became Director of the New York State Psychiatric Institute at Ward's Island, Dr. Kirby came with him to New York as Associate in Clinical Psychiatry. He assisted in the work of reorganizing and modernizing the medical work of the state hospitals and in the development of post graduate courses at the Institute. During this period Dr. Kirby went to Munich where he studied for a considerable period with Professor Kraepelin.

In 1908 Dr. Kirby was appointed to the newly created position of Director of Clinical Psychiatry at the Manhattan State Hospital. In this position he developed the medical work of the Hospital and organized methods of study which were later adopted in the New York State Hospitals and in many institutions throughout the country. He prepared a classification of the psychoses in outline form with explanatory notes for the use of the state hospital physicians. This was later expanded in the Statistical Guide which was adopted by the National Committee for Mental Hygiene and by The American Psychiatric Association.

In 1917 Dr. Kirby was appointed Medical Inspector by the New York State Hospital Commission. Four months later he resigned to become the Director of the State Psychiatric Institute where he remained until his retirement August 1, 1931. He assisted in developing the plans of the new Psychiatric Institute. The building was completed in 1929 when the Institute moved from Ward's Island to the Columbia Medical Center.

During the War Dr. Kirby was commissioned Major in the Medical Corps and was in charge of the neuropsychiatric service of the U. S. General Hospital No. 1. He organized a special unit in this country for the care and treatment of neuropsychiatric patients who had returned from overseas. At the close of the War he was commissioned Senior Surgeon of the U. S. Public Health Reserve Corps and served as a member of the Federal Board of Consultants on Hospitalization, and later as medical counselor of the U. S. Veterans Bureau.

In 1923 Dr. Kirby, Dr. William L. Russell, and Dr. John R. Ross were appointed a committee to make a survey of medical services in the New York state hospitals. This investigation resulted in improved standards of care and treatment in the clinical work of the hospitals.

Dr. Kirby has been a most successful teacher both in theoretical and clinical psychiatry. In 1914 he became Professor of Mental Diseases in New York University and Bellevue Medical College which position he held until 1917. From 1917 to 1927 he was Professor of Psychiatry at Cornell University Medical College; from 1927 to 1932 he was Professor of Psychiatry in the College of Physicians and Surgeons, Columbia University; since 1932 he has been Professor of Clinical Psychiatry at Cornell University Medical College, and Attending Psychiatrist at the New York Hospital. He has also served as Consulting Psychiatrist at the Presbyterian Hospital, the Neurological Institute and the United States Veterans Hospital.

Dr. Kirby has held many important professional positions of distinction. He has been President of the New York Psychiatric Society, of the New York Society for Clinical Psychiatry, the New York Neurological Society, and of The American Psychiatric Association. He has been an active member of the American Neurological Association, the New York Academy of Medicine, and the National Committee for Mental Hygiene. For many years Dr. Kirby has been active in the affairs of The American Psychiatric Association through its various committees.

As editor and author and through the researches which he has directed and published in collaboration with other physicians, Dr. Kirby has contributed much to the advancement of psychiatry in this country.

A CASE OF SCHIZOPHRENIA IN ONLY ONE OF IDENTICAL TWINS.*

By J. KASANIN, M. D.,

Clinical Director, State Hospital for Mental Diseases, Howard, R. I.

In the field of psychiatry there is no more interesting mental disorder than schizophrenia, about which there are so many divergent views, especially as to the etiology. One school of psychiatry maintains that we are dealing with some toxic-infectious cause which is responsible for its protean manifestations and symptoms. Another school maintains that we are dealing essentially with a fundamental defect in the germ plasm and that the future patients are born with an innate predisposition for this disease which develops no matter what the environmental factors may be. Still another school maintains that we are dealing largely with especially endowed individuals who break down by virtue of definite environmental stresses; the possibility of some mild toxic-infectious factors is not denied, although the main stress is laid on the early experiential factors in the causation. Those who support the theory that the cause will finally be found in toxic-infectious factors point to general paresis as a disease in which various constitutional and hereditary factors were held to be important until the discovery of the spirochete finally proved the fallacy of a constitutional theory. The adherents of the fatalistic, constitutional theory of etiology of schizophrenia point to the recent studies in heredity, especially in the field of the so-called identical twins. It was first pointed out by Francis Galton¹ that twins are classified into two groups, monozygotic and dizygotic. The monozygotic twins are a product of a single egg which, instead of producing only one individual, divides, in the course of its development, into two. They are always of the same sex and have only one placenta and one chorion. They are strikingly alike in appearance, having eyes of the same color and hair of the same color. They resemble each other so much that even members of

* Read at the meeting of the Boston Society of Neurology and Psychiatry, February 15, 1934.

their own family sometimes cannot distinguish between them. They are called by various names such as identical, monozygotic, uniovular, homologous, similar, duplicate, etc. The other kind of twins originates from two eggs, independently fertilized. They may present any combination of sexes, both male, both female, or one male and one female. They usually have separate fetal membranes unless these membranes are fused. They are no more similar than any other two brothers or sisters in the same family. They are commonly called dizygotic, binovular, dissimilar, fraternal, or pigeon-twins.

All work in the field of mental disease is complicated by the fact that we are dealing with at least two sets of variable factors, one of which deals with the original endowment of the individual, and the other deals with the environmental factors. In identical twins we have the opportunity of studying the specific influence of environmental factors because we have at least one constant set of factors, that is, the original endowment of such individuals with their innate tendencies and predispositions. If schizophrenia is due to a fundamental defect in the germ plasm, then no matter what the environment would be, if one identical twin develops schizophrenia, the other twin is also bound to develop the same disease. As a matter of fact the reports thus far have tended to support exactly this point. A fairly large number of cases have been reported by various investigators, some of them quite striking, where identical twins, reared apart and brought up in different environments, nevertheless broke down with schizophrenia. A past president of our society was one of the first to report two such cases from his own hospital. Dr. Abbott had a young woman with schizophrenia at the McLean Hospital whom he planned to transfer to Butler Hospital in Providence. On visiting Butler Hospital subsequently he thought that he saw his own patient there and inquired when she was transferred from the McLean Hospital. He was told that no such transfer had been made and it subsequently developed that the young woman whom he saw at the Butler Hospital was an identical twin of his own patient at McLean Hospital. Similar reports have been made by other students of heredity and mental disease. Parker² believes that the occurrence of schizophrenia in identical twins points to the germinal origin of the disease but he conservatively remarks that perhaps it is

accidental that there are no reports in literature where a schizophrenic breakdown took place in only one of identical twins. If such cases could be found where only one of identical twins had schizophrenia and the other did not, then the germinal origin of schizophrenia would be open to great question. The reason why such cases have not been reported is, in my opinion, the fact that the cases where schizophrenia took place in both twins were more dramatic and attracted more attention. It was my good fortune to come across a pair of identical twins in which only one twin was affected by the disease and where the other has remained well for eight years.

As a matter of fact, from a review of the literature I find that this is not the only case in which only one of twins has developed schizophrenia. Rosanoff³ in a personal communication informed me that he had 38 pairs of monozygotic twins with schizophrenia. In 27 of them both had schizophrenia, whereas in 11 only one of the twins has been affected. This material has not been published.

AUTHOR'S CASE.

A. B., aged 29, male, cabinet maker, white, single; case No. 16844; admitted to the State Hospital for Mental Diseases, Howard, Rhode Island, August 25, 1931; discharged November 14, 1933. Diagnosis: dementia præcox, paranoid type.

Chief Complaint.—The patient was admitted to the hospital on a transfer from the psychopathic division of the Providence City Hospital because for several years he had ideas of persecution and made threats to kill. He believed that the government was shadowing him and was therefore unable to keep a job for the five years prior to hospitalization.

Family History.—Patient's father immigrated to this country from one of the Scandinavian countries and for forty years has been a machinist for a large concern in Providence. He is a strict, pious man who believed in discipline and obedience. The patient's mother died at the age of forty. She was described as a kind and good-natured woman. There is no history of nervous or mental diseases in the family. There are two brothers and three sisters older than the patient who are living and well. One younger brother died a few years ago from tuberculosis.

Personal History.—Patient was born November 10, 1901, in Providence, Rhode Island. The birth was normal and full-term. Early development was quite normal. Walking, talking and dentition occurred at the usual age. There was nothing significant about his childhood. He started school at the age of six and completed grammar school at the age of 14. He then

entered the Technical High School, took the four-year course and graduated when he was 18. He was an excellent student and wanted to go to college but his family could not afford it. Patient had pneumonia at the age of six. Both twins had measles at five and mumps at six. At the age of 16 both twins began to develop a hearing defect, especially in the left ear. Their health was otherwise good. After leaving school the patient obtained work as a machinist in a large industrial concern. He worked there for two years and was laid off during the depression. After this the patient began to do odd jobs as cabinet maker and carpenter. He always managed to earn between \$25 and \$35 a week. A few years ago a piece of steel became imbedded in the patient's left eye when he was sharpening some tools. A cataract formed over the traumatic area so that his vision was impaired.

The patient was described as an idealistic young man who was interested rather more in writing than in manual work. During his senior year in high school he went through a period of extreme interest in religion. He was considered seclusive and reticent and had few friends. He spent all of his leisure time with his twin brother to whom he was strongly attached. After graduation from high school, the interests of the two brothers became divergent. The patient became more and more absorbed in religion whereas his twin brother was more interested in worldly matters. For two years the patient studied the Bible. He went to church frequently until at the age of 20 he began to feel that religion did not satisfy his needs. The patient never went out with girls and the family ascribed this fact to his natural reticence and bashfulness. When he was compelled to go into society, strangely enough, the patient was quite active and was "the life of the party." At the age of 20 he shifted his interest to literature, studied Shakespeare and decided that he himself should write. All of his leisure time was spent in this manner. His essays were heavy and quite morbid in nature. The publishers declined his manuscripts and repeatedly returned them. The patient in an attempt to write something more acceptable decided to write sketches for vaudeville. These, however, were far too serious. Instead of confessing his inability to write the patient began to feel that some person or organization was preventing him from making good. He thought that people were trying to blackmail him and prevent the publishers from accepting his manuscripts. Three years before his admission he complained of being shadowed by detectives. As he walked he looked around himself suspiciously and acted so strangely that he was picked up several times by the police. In September of 1930 patient decided that he should go to Boston where he would have more peace and where he would not be disturbed by detectives who prevented him from achieving success. His money ran out during the winter and he had to go to work as a dishwasher to support himself. If anyone tried to approach him he decided that this must be a detective. In the early spring of 1931 he started for New York but on the way he stopped in Hartford and obtained a job as a dishwasher in a restaurant. He was laid off in a few days and blamed the detectives for it. After he arrived in New York he obtained a

few odd jobs but most of the time he was without work and hungry. He began to feel that everybody in New York was a detective. He let his hair grow long and looked like a backwoodsman. One day his sister, who is a manager in a department store in New York City, saw him on the street and when she recognized him she became much upset. She sent him back to Providence and as soon as he arrived there he went to the police to complain about detectives. The police advised the family to have him committed.

Hospitalization.—On admission to the City Hospital he was sullen, suspicious, and resentful and told a story about being shadowed by many detectives. He was preoccupied, introverted, seclusive and extremely suspicious. He told the physician that five years previously detectives began to watch him and question him about his literary efforts. In a hotel where he lived, a large number of "snoopers" came in and filled the halls, corridors, and streets and every nook and corner of Providence. They followed him so much and made his life so miserable that he had to go to another city. He went from city to city to escape their persecution. The patient stated that he must have been taken for somebody else and up to the time he entered the hospital, the detectives interfered with him, meddled in his business, questioned him, etc. The work, he said, was done by government stool-pigeons and people who asked him for aid were also stool-pigeons. He was correctly oriented in all fields.

When he was transferred to the State Hospital he repeated the same ideas of persecution. Most of the time he was extremely seclusive, evasive, suspicious and uncommunicative. Within a few months the patient began to be more communicative and took more interest in his environment. He spoke more freely about his delusions and mentioned many incidents to show how the various detectives tried to make his life miserable for him. He spoke about a young girl who was in the hotel who tried to "make" him and also "frame" him. He stated that she knew all his business, that she "tipped off" other people about him and sent detectives to arrest him in Boston when he happened to look in a jewelry store window.

In November of 1931 the patient was allowed to go home for a few days. Then he was brought back several times as he had difficulty in adjusting himself in the community and in obtaining employment. On several occasions he annoyed various public officials and it was necessary to send him back to the hospital; it was finally possible to discharge him on November 19, 1933.

C. D., the other twin, had the same background as A. B. As mentioned above he also suffered an impairment of hearing at the age of 16 and the condition was diagnosed as catarrhal deafness. In comparing the twins the family felt that C. D. was more active, vigorous and somewhat more extraverted than A. B. He seemed to be more alert and was able to maintain better contacts with people. Nevertheless, he was extremely attached to his twin brother

and the pair were quite inseparable. During his last two years in high school he was also extremely interested in religion. After graduation from high school an uncle of the family who was a successful mechanic in Detroit, invited one of the twins to come there and work with him. A. B. did not express any enthusiasm about going to Detroit as he was too much interested in religion. For a long time the twins could not make up their minds to separate but finally the economic depression forced a decision and C. D. went to Detroit. Both brothers are good machinists and cabinet makers and C. D. rapidly became successful, and within a few months was making as high as \$100 a week as tool maker. For two or three years he worked in Detroit, saved several thousand dollars, and decided to complete his education. He went to a college of engineering in one of the midwestern cities. On graduation from college he returned home, served a year of apprenticeship in a large electrical concern and then started a small business of his own. He is having a somewhat difficult time due to general business conditions but he is quite energetic, hopeful, and is trying to make the best of the situation. He is a keen, quite alert-looking young man who looks exactly like the patient but is more aggressive.

A comparative physical examination of the twin brothers shows that they both weigh about the same. A. B. weighs 161 lbs., C. D. 162 lbs. Both have gray-blue eyes. The left eye of A. B. shows an opening of the iris in the five o'clock direction where the foreign body entered. There is slight opacity of the lens due to the foreign body and slight adhesion to the lens. Both brothers have impaired hearing, greater in the left ear than in the right.

There has been the usual striking similarity in the two brothers since early childhood. There have been the usual stories of their own parents not being able to tell them apart. At school it was deemed advisable to separate them and to place them in different classrooms. The family physician, Dr. A. C. Crocker of Providence, who is extremely interested in the family, believes that there was only one placenta when the twins were born, but he has no birth record. He has followed these twins throughout their lives, and states that they have been strikingly similar since birth and that he could never tell them apart.

The question which naturally arises at this point is whether or not we are dealing with identical twins. Unfortunately we have no birth record. Most of the students of heredity agree that when twins are of the same sex and look strikingly alike, the chances are that they are identical. It is to be remembered also that in reported cases of identical twins developing schizophrenia, there were also no birth records supplied that would show that each pair had but one placenta. If you examine their finger prints you will notice a greater similarity between the right hands of these twins, than between the right and left hand of each twin, a point which has been stressed by Newman in "The Differential Diagnosis of Twinning." The photographs which were taken in their adolescence show this striking similarity. Unfortunately I cannot reproduce them here for obvious reasons.

An analysis of these two cases shows the great importance of the environmental factors. Here we have two brothers, originally alike in their tastes, interests and bringing up. One of the brothers becomes more interested in religion than the other, although both of them go through a period of marked religious interest. C. D. goes to Detroit, becomes a successful mechanic and later a professional man, "life smiles upon him," and he makes a satisfactory adjustment, overcoming the difficulties resulting from the present business depression. A. B. tries to write, does not succeed, and so projects his failure on the outside world and blames the government and various people as being responsible for his lack of success. I think this case illustrates unusually well the relative importance of environmental factors. The twin brothers have approximately the same endowment and their life careers were quite similar up to the age of eighteen as there was no variation in their environment. At the age of eighteen the environment changed sharply. It became quite favorable for one and just as unfavorable for the other. Although possessing the same endowment and the same early environmental forces, they have developed altogether different psychobiological reactions. One individual, having a sustained favorable environment, becomes a successful, well-adjusted man in his community. When the environment became bad for the other individual, who is presumably endowed exactly as his brother, he has to find a solution of his failure in

a psychosis. Granting that there is some slight difference even in identical twins, a significant dynamic influence of environmental forces leading to the preservation of mental health in one twin and to the formation of a psychosis in the other twin seems to have been demonstrated.

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BELL'S MANIA. (ACUTE DELIRIUM.)

BY S. H. KRAINES, M. D., CHICAGO.

There is a group of cases of acute psychoses that has been described by several observers, and yet has been quite neglected. This group has had no uniformity in nomenclature or classification. Some of the older writers tended to place these cases in an individual category, while some classify them among the manic-depressive reactions, and still others, among the toxic infectious disturbances. The resulting confusion has made the study of these cases very difficult, and there is need to crystallize the situation. This unusual group presents the syndrome of a sudden onset, with overactivity, great excitement, sleeplessness, apparent delirium, and distorted ideas; without any clear evidence of a definite toxic infectious factor.

These cases were first described by Luther Bell in 1849. Quoting his own words we have the following description of the disease:

On inquiry of the invasion of the attack, you will find that it came on suddenly "about a week since"—frequently, indeed, by a sudden outbreak. There are no antecedents of questionable actions and conversations, as are almost always described in common cases, or even in the most rapidly developed instances of acute mania. The progress of the disease does not present any great change of characteristics. The patient will get so little food, so little sleep, and be exercised with such constant anxiety and restlessness, that he will fall off from day to day. The emaciation goes on with a rapidity unexampled in cases of mania, or fever, or delirium tremens. At the expiration of two or three weeks, your patient will sink in death, diarrhea occasionally supervening a few days previously. On the other hand, if the tendency is favorable, convalescence is established in about the same period, and the sufferer emerges in a state of absolute recovery at once, as he would do in the delirium of any acute disease. Nor are there any of the general consequences such as attend mania, as melancholy or impairment of mental integrity. The cure is permanent as well as complete. I have had but few opportunities of making autopsic examinations but the slight cerebral and meningeal engorgements which constituted the only marks of diseased change were not greater than the incidents of sleeplessness, agitation and death might be expected to leave, independent of any great morbid action behind

these. These cases have delusions which were usually indefinite—confused—but partaking always of the distressful type. There is loathing of food, with suspicions of its being filthy or poisoned. Three-quarters at least of them terminated fatally.

He lists eight "peculiarities" of the disease as follows:

(1) Its onset is rapid, almost all the cases dating back about a week only, before the day when the urgency of the manifestations compelled a resort to the insane hospital. (2) The want of sleep has then become extremely urgent. (3) There are no signs of undue arterial action in the pulse, or in the vessels immediately supplying the head. (4) The intellectual wandering is suspended for a moment or two by an effort of attention. (5) There is loss of appetite, and in fact such loathing, as seems to excite, in the sufferer's mind, the notion of poisoned or filthy food. (6) The hallucinations are scarcely affected by external circumstances, and partake of an indefinite sensation, of distress and horror. The patient will sometimes have a struggle of desperation, when the attempt is made to take off his clothes, place him recumbent or the like, and cannot be soothed by any management, as in delirium tremens or ordinary mania. (7) There is an absence of any of the characteristic external marks of typhoid fever, and, as is believed, although sufficient examinations have not been made to justify my declaring such to be absolutely the fact, there are no pathological lesions evidenced in the intestinal canal, the brain or its meninges, or other of the great cavities. (8) It is acute in its march and sequel, running its course to death or to entire recovery, in three or four weeks. And the recovery is complete and permanent.

The following case is chosen as an example from the eleven reported by Bell:

C. P. Admitted November 14, 1844, age about 40: married. The first insane symptoms were noticed about a week ago, soon after attending some phrenological lectures. Her mind has been in a wild chaotic state ever since.

19th. Has continued highly excited; screaming most of the time, and perfectly incoherent. Her face was flushed—pulse small and frequent; no intolerance of light; great restlessness.

21st. Appears quite feeble; appetite poor; lips dry; tongue covered with a thick dark coating; sordes on the teeth; pulse rapid and very feeble.

22d. Is confined with the bed-straps to prevent the continued effort to get out of bed. Is quite low and feeble, but is somewhat better than yesterday or the day previous.

23d. Saw friends who were sent for under the belief that she would not survive; appears to have some recognition of them.

Dec. 2. Has gradually amended, now sits up; is quiet; mind still obscured on many points; does not know how long she has been here, nor any of the circumstances connected with her leaving home. She forthwith recovered her reason and was dismissed Jan. 4, 1845. She had no turn of depression or other form of mental change, and continues in perfect health. There was

no intolerance of light, nor the external marks connected with typhoid fever. The treatment was essentially expectant without depletion or opiates, symptoms being met as they presented themselves.

A survey of the literature reveals that there are several names for this clinical syndrome, and that the general tendency has been to place these cases either in the *toxic-infectious-exhaustive group* or into the *manic-depressive group*. Such names as "Bell's mania," "typhomania," "acute delirious mania," "delirium grave," "acute delirium" have been applied. Dercum recognized the disease as a distinct entity and called it a "specific febrile delirium."

Baillarger speaks of this condition as "delire aigu vesanique," but merely describes the disease.

Berkley isolates the group as *delirium acutum*, and under pathogenesis of the disorder, says: "Besides the infectious diseases, quite a number of causes are mentioned by various authors, as provocative agents. Among these are perturbation of the mind, unhappy love affairs, excessive mental strain . . . etc." He brings up the issue as to whether or not the "nerve tissue is unstable, and the residuum of mental equilibrium being readily overturned by the presence of any irritating and debilitating poison, whether it be engendered within the body or received by it from external sources." He cites as the predisposed age group individuals between 25 and 45, and states that the female sex is more often affected. He stresses the tendency of these individuals to be joyous, dancing, shouting, and indulging in an expansive imagery.

Bowers speaks of the "hyperactive or exhaustive mania" under *manic-depressive psychosis*, and says that "the symptoms of this condition bear a close resemblance to those of an acute inflammatory disease of the brain or meninges."

Church and Peterson under *manic-depressive psychosis* list "acute delirious mania," as a "very rare disorder, possibly sometimes a most aggravated condition of the manic phase of manic-depressive insanity, but doubtless more often the result of some acute infection or intoxication, due to actual unrecognized physical disease."

Buckley talks of delirious mania under the *cyclothymic psychosis*, but raises the question whether the cases belong to the manic-depressive or to the somatic diseases. He says further: "There seems to be an admixture of the features of true delirium with the characteristics of the manic."

Ziehen stresses the hallucinatory character of the illness and classifies it under "*paranoia hallucinatoria acuta*—die inkohärente Varietät."

W. Bevan Lewis classifies this illness as *acute delirious mania*, and says: "This, the *délire aigu* of French writers, represents the most profound maniacal reduction which we meet with. . . . It differs from the ordinary acute mania, in the intensity of the process, the extreme reductions in object consciousness, and the absolute oblivion in most cases to all around, and the rapid course and frequency of fatal termination. . . . It is quite exceptional for a case of acute mania to prove fatal . . . not so, however, in acute delirious mania; here the outlook from the first is ominous."

Krafft-Ebing on autopsy finds that there are no abnormalities visible to the naked eye except for marked cerebral congestion. On microscopic section, he finds that there is this marked hyperemia with an occasional extravasation of blood, and cloudy swelling of the ganglion cells. He feels that there is a special toxic effect upon the "*vasomotorische Nervensystem*" with paralysis of the blood vessels and consequent cerebral engorgement. In his group of cases there were more females than males. As causes, he lists excitement, excessive drink and fevers, but "much more important are the predisposing factors in the fight for life, the year long troubles, the desire for drink, the insufficient nourishment, the weakening influence of difficult births and disease." He includes also the passing of the climacterium, head injuries, typhoid with cerebral complications, etc., and suggests that *delirium acutum* can come on in the course of delirium tremens, in dementia paralytica, and in hysteria. He feels that if the above factors are discarded, the assumption is probable that the pernicious character of the cerebral hyperemia is based in the pre-morbid condition of the affected organs, and that delirium acutum is a reaction form of defective or exhausted blood vessel tonus in the brain. Death is due to paralysis of the heart.

Bonhoeffer lists such cases as "*delirium acutum*" and classifies them with the *infection psychoses*, but has no evidence of any infectious process at work. He feels that the fatal outcome is due to cardiac collapse following the overactivity.

Binswanger speaks of a "*delirium acutum*" and cites two cases of typical symptomatology, with marked overactivity terminating

fatally. On autopsy, the brains were found to be hyperemic and microscopic sections showed some cellular changes in the cortex, such as disappearance of the Nissl bodies and poor staining of certain cortical areas. He concluded that the disease rested on an *infectious basis* and that there probably was some toxin acting on a weakened and susceptible organism.

Bianchi and Piccinio thought they had isolated a bacillus that was the specific factor in this illness, but later work especially by Ceni did not substantiate these claims.

Alzheimer speaks of three groups of "*delirium acutum*" with varying degrees of involvement of the brain, from passive congestion to marked changes in the ganglion cells. A number of other workers have also found mild cellular changes in the brains of these cases.

Rotenberg describes a case of "*acute delirium idiopathicum*" which on autopsy showed an acute hemorrhagic meningo-encephalitis. The microscopic changes led him to believe that there was "acute degeneration with disturbances of circulation and with the absence of inflammatory phenomenon." He felt that this condition was a clinical syndrome which however had no specific pathologic anatomy.

Claude and Cuel describe three cases of acute delirium which have sudden onset, no clinical physical findings except for an elevation of temperature, but present such marked distortion of behavior as to suggest the diagnosis of an "akute schizophrene psychose." There was a great amount of expenditure of energy with insomnia, delusions, and complete exhaustion. Gross post mortem examination revealed marked hyperemia of the brain, and microscopic examination showed disappearance of Nissl bodies, a lack of homogenous staining of the protoplasm, and irregular cell outlines. In areas, there was some round cell infiltrations and a fat stain showed some fatty degeneration of the cells. These observers feel that an *infectious-toxic noxa* was present that had a special affinity for the central nervous system.

Wernicke speaks of a hyperkinetic Motilität psychose and tries to link it up with disturbances of the menstrual periods.

Kraepelin denies that there is such a group as acute delirium but separates out two types of cases which are strikingly suggestive. One group he calls *collapse delirium* and describes it as a condition

which appears with a febrile attack and develops a violent state and a high grade confusion with dream-like sensory illusions, flights of ideas, changes of mood, lively excitation, and disconnected delusions. In another section of the book under *manic-depressive psychosis*, he presents a small group of cases with a *delirious* picture. These cases as a rule begin suddenly with sleeplessness, restlessness, of one or two days duration. These cases are exceedingly active and have many delusions. They differ from collapse delirium in that they get well and that the fever never rises very high. Both types of cases seem to fit in well with "Bell's Mania" (acute delirium).

Henderson and Gillespie divide the *manic-depressive manic group* into three stages according to the acuity of the symptoms, and list "delirious mania" under the most severe type. The following case is taken verbatim from their book: "Case 4.—Summary: Extreme manic excitement or rapid onset in a young man of an enterprising hard working disposition. Continuous wild excitement, regardless of physical needs of any kind: talkativeness so incessant and disconnected as to amount to incoherence: great elation: attention given to nothing for more than a second or two: intercurrent infection: gradual subsidence with playful happiness in the meantime: ultimate complete recovery (within 2½ months) with insight, but amnesia for the period of extreme excitement."

AUTHOR'S CASE.

The patient, a 24-year-old female, was admitted October 14, 1932, to the Boston Psychopathic Hospital, in a state of excitement. Her family history was negative except for the fact that she had a domineering father and an overindulgent mother. The patient was born, by Cæsarian section, when her mother was 37 years old. Her early development was normal. When the patient was 10, the father left home because of another woman, only to return several years later. He died when the patient was 18. She went through college, graduating at the age of 20 and doing excellent work in all her studies and in outside dramatic and athletic activities. She worked as a governess for three years and then was thrown out of work (age 23). She was unemployed one year before admission to the hospital. Her sex life showed moderate autoerotic practices since the age of 14 associated with a great deal of remorse. She had never had any heterosexual experiences and had very little opportunity to go out with men. She was a cheerful and happy person in company but tended to grieve when alone. She was very sensitive; and was a leader in all college activities.

After losing her position, through no fault of her own, in July, 1931, she looked daily for work, but was unable to find any. The financial situation was stringent, and she worried considerably over this and also because her school chums were getting married and she did not even have a boy friend. About one week before admission she started training as a bond saleswoman and became very enthusiastic over her work. She studied the subject very intensively, and could not go to sleep until the early morning hours. She felt that at last she had found something to do, and she worked at a much higher pitch than usual. Two days before admission (Oct. 12, 1932) she went to bed a little tired, but otherwise normal, and about 11 p. m. suddenly had a vision, lasting a few moments, in which she saw herself dying, and in which God appeared and told her she would marry a boy she had known in her childhood, and that this boy would die and leave her pregnant with a son. She felt that the sales manager of the bond course would elope with her and that she would be sued for alienation of his affection. She did not sleep the rest of the night and the next two days spoke about these delusions and hallucinations as if they were real. She presented no other symptoms. On the day before admission she attended a meeting and felt "sick to her stomach." She saw an osteopath who gave her a treatment and a pill to make her sleep. She seemed normal that evening, partook of some supper, and read a magazine. About 8 p. m. she began "to feel bad," and then she became very insistent that her vision was true, became excited and then spontaneously insisted on calling the Psychopathic Hospital just to prove that her mind was all right. When she could get no satisfaction over the phone, she came to the hospital and was admitted (Oct. 14, 1932).

On admission, she sat tensely in her chair telling her story with a tremendous pressure of speech, and in a somewhat incoherent manner. Her cheeks were slightly flushed, but her movements were unimpaired and there were no signs of any physical illness. Rectal temperature was 100°, respiration 20, pulse 84. She was a short stocky girl, about 25 pounds overweight. Heart, lungs and abdomen were negative. Her pupils reacted normally to light and accommodation, and her fundi were normal. Neurological examination was negative. Her mental status showed her to be restless and excitable, speaking with such a pressure that her ideas tended to be incoherently expressed. She was well oriented. She repeatedly talked about the delusion and hallucination mentioned previously, but did not seem hallucinated at the time of admission. The next morning she felt that her mother was locked up in one of the rooms, that reporters were coming to photograph her, that a boy friend of hers was in the hospital and that she heard his voice. She became very active, was distractible, stuttered artificially in her speech at times but was neither elated nor depressed. She appeared confused, and did not seem to have a grasp of her surroundings, but when questioned persistently, she was able to answer correctly as to time, place and person. She said she understood her condition because she had studied psychology. She talked almost continuously. She repeatedly disrobed herself, asked for whiskey which she had never imbibed before. She was incontinent at times. She expressed remorse at this incontinence. She was in continuous activity,

moving steadily and restlessly about and talking almost all the time. She felt that there were spies about. At first four drams of paraldehyde would cause her to sleep for three or four hours but later it had almost no effect. Amytal in three grain doses, large doses of elixir of alurate had very little effect, morphine grains $\frac{1}{4}$ and hyoscine grains $\frac{1}{100}$ caused her to relax only for short periods, and nembutal (pento barbital) $7\frac{1}{2}$ grains intravenously caused her to sleep for only two and three-quarter hours. When enemata the first few days yielded poor results, eight ounces of mineral oil were given by stomach tube, and a huge bowel movement resulted. Her excitement continued unabated, and the slight temperature rise that she had the first few days varying between 99° and 100° rectally, suddenly rose to 102° on the seventh day and continued high, reaching 104.6° on the eleventh day. Physical examination revealed nothing in the lungs or elsewhere. She ate very little though she took fluids fairly well. The continuous baths had no effect on her and the pack caused her to struggle so much that it aggravated her fever and raised the leucocyte count, which had fluctuated between 10,000-14,000 to 41,000, but this leucocytosis returned to its previous state a few hours later. She would get out of bed and roll around on the floor insisting that she heard voices through the ventilator, and that these voices were talking about her and "Eddie." Her voice became hoarse from so much talking, and she seemed completely exhausted, but nevertheless continued her activity. Under complete relaxation (nembutal) the spinal fluid tap showed an initial pressure of 230, rising to 430 on compression of the right, and 330 on compression on the left jugulars, with rapid rises and falls. The total protein was 39, sugar 58, and the gold sol. was negative in the spinal fluid. The Wassermann was negative in both the blood and spinal fluid. The spinal fluid showed no cells. The urine was negative. Phenolphthalein test showed no abnormality. X-ray of the chest was negative, and X-ray of the skull showed no enlargement of the sella or other abnormality. Later X-ray of the gastro-intestinal tract showed no abnormality. On the ninth day she was given intravenously sodium amytal ($10\frac{1}{2}$ grains) and slept for six and a half hours. Her restlessness continued and necessitated a restraint in an effort to prevent so much overactivity, but she liberated herself and it was discontinued. On the eleventh day, when the temperature rose to 104.6° nine grains of sodium amytal were given intravenously, and three grains were given by mouth every two hours, so that in the next 15 hours she received 36 grains. In spite of this she slept only about eight hours, but her temperature dropped to 99.6° , and did not rise above 100.6° rectally after that, except later in her illness. In the next two days she received an additional 90 grains of sodium amytal by mouth, but she slept only at intervals, continuing to be noisy though somewhat subdued. At one interval she became quiet and lucid for a period of about two and a half hours.

On the thirteenth day there was a marked change in her symptomatology and the amytal was discontinued. Her overactivity subsided, and she was able to speak and converse in a much more rational manner, though still with a push of speech. She developed a great attachment for the physician, and

continuously had delusions about him and his whereabouts. On the fourteenth day she was able to cooperate for a formal mental status and was shown to be oriented, of a somewhat depressed mood, with impaired remote memory, and an amnesia for the events of the previous two weeks. She had delusions that a friend was dead, that she was pregnant, and she heard voices telling her these things. She continued to improve steadily, except for a few periods of excitement in which she talked loudly, and would lie on the floor talking about religion, and about being shot. These periods grew further and further apart. A slough developed over the site of the injection of the sodium amytal and this had to be dressed daily, but the patient cooperated fully for it. On the twenty-third day she was able to cooperate for a basal metabolism test, which proved to be plus 14, and when repeated the next day dropped to a plus six. Her delusions of pregnancy remained and she felt that there was some power in her bed that would electrocute her, and that some voice had told her that she was going to die. She slept excellently, eight to nine hours nightly, without any medication, and one month after admission she was transferred to the convalescent ward, and a few days later was able to attend a patients' dance. The ulcer in her arm took a long time to heal. During the first three weeks of acute excitement, she had lost about 25 pounds, but this was quickly regained in her convalescence. The infection in her arm caused a mild and irregular fever, which gradually subsided. The delusions also gradually disappeared, and in about six weeks after admission she was symptom-free. She stayed in the hospital for an additional two months for observation, going home during the week ends, and no incident of note occurred except a mild pyelitis which lasted a short time. She has been followed ever since and is behaving normally in all respects.

When one reviews the above cited cases, one is struck by the fact that practically all observers classify the disease as a distinct subgroup. Those who feel that this is a manic-depressive reaction still isolate it as a "delirium mania," while those who insist that it is of toxic infectious origin also feel that it is markedly different from the usual run of delirious reactions. For the most part those who feel that this condition belongs among the affective psychoses feel so because there is very little fever; there are no physical findings either on clinical examination nor any findings on post-mortem study, and because there are certain signs of manic excitement such as overactivity, and a great push of speech. There is also a distinct tendency to classify the illness according to the prognosis, so that those cases that get well, still showing no signs of physical illness, are grouped among the manics and those cases that terminate fatally are grouped with the infections.

On the other hand those who feel that this is a disorder of toxic infectious origin, point out that there is usually a fever; that one

is impressed with the "delirious" part of the picture, with the confusion and the disturbance of the contact with reality that the toxic patients are supposed to possess. Then again, the type of delusions present in these cases differs from the usual manic grandiose ideas. The overactivity is often the extreme throwing about, rather than the manic playfulness or anger. The most important controversial point, however, is the absence of any significant findings on autopsy.

Regardless of the general classification, the disease stands out as a clinical syndrome. The picture as we see it today may be formulated as follows:

The etiology is unknown. Some writers have the impression that the illness is more common in females. Infectious processes may precede the onset of the illness or as has been mentioned in our case, may not. Autointoxication associated with constipation has been mentioned and some writers speak of endogenous and exogenous toxins, referring to endocrine and infectious elements. Psychiatrically, our case showed a striving ambition that was thwarted in its fulfilment financially and sexually, but there are thousands of others in similar condition who have no such illness. The only laboratory finding was a high spinal fluid pressure which some authors may even insist is within the limits of normality; the spinal fluid was otherwise negative. In the cases quoted, the pathology seems to be that of acute hyperemia with some minor changes in the appearance of the cells (such as disappearance of the Nissl bodies) and one is immediately confronted with the question which Bell raised: "Were the slight cerebral and meningeal engorgements which constituted the only marks of the diseased change, greater than the incidents of sleeplessness, agitation and death might be expected to leave, independent of any great morbid action behind these?"

The symptomatology is quite definite. There is an acute onset which may be preceded by insidious prodromal signs, as the excessive interest and excitement over work that our patient had for about one week before admission. The acute course is characterized by marked motor excitability and great push of speech. The patient throws herself about the room, running from the window to the ventilator, on to the bed and off again to pound at the door, all in a continuous round. This activity continues almost all day

and night. Often the speech will have a playful element in it, as the patient stutters, and spells out words; and often the great pressure of speech prevents the patient from finishing her thought so that only incoherent phrases are poured out. Often there is a monotony in repetition of the same idea, but even then the words may be hard to distinguish. At times there are symptoms of distortions such as delusions of a poorly systematized nature and transient hallucinations, and at other times the picture presents a number of manic elements; a factor that in the light of our clinical knowledge would lead one to believe depended on the personality of the individual before the illness. Intercurrent infections seem to be frequent in these cases, and obstipation occurs often. The prognosis is poor and death, most probably from cardio-vascular failure following exhaustion, seems to be the rule in the greatest number of cases. Death most often occurs within three weeks. Those cases that recover are presumably free from a recurrence. There is an amnesia for the period of acute excitement.

The treatment of these cases is of special interest. The tremendous excitement causes a great strain on the organism, and in our case the loss of 25 pounds in an obese patient was well tolerated but would not be so well stood in a thinner person. Nourishment is therefore very important and one should resort to the tube feeding if necessary. Constipation should be watched for. In our case large amounts of sodium amytal were used in order to secure the much needed rest, and it seemed to have an all-important effect in producing a change in the patient's condition. One seems justified in utilizing just as much medication as necessary, no matter what the standard dosage is, in order to procure sufficient quiet to prevent cardiac failure. Sodium amytal is especially recommended as a non-toxic drug. The prognosis, which is considered so ominous, might be changed under such treatment.

SUMMARY.

(1) There are cases of acute excitement that are classified under several headings with apparently no recognition as to the uniformity of symptomatology. These cases have been diagnosed as Bell's Mania, typhomania, acute delirious mania (manic-depressive psychosis), delirium grave, acute delirium, specific febrile delirium, and collapse delirium.

(2) Luther Bell described these cases in 1849 and the description is slightly modified as follows: There is a sudden onset; exceedingly great overactivity; marked sleeplessness; great push of speech with statements that are disconnected at times by reason of the rapidity of flow; disconnected and poorly systematized delusions; transient hallucinations that border on illusions; appearance of confusion, but when one insists that the patient answer the questions, the patient can "suspend the intellectual wanderings" long enough to answer correctly as to orientation. The course of the illness is from three to six weeks, with a fatal termination in a large percentage of cases, apparently from cardio-vascular failure due to overactivity. The cases that recover have no after symptoms. No pathological evidence of note has been found by later workers.

(3) Treatment is recommended in the form of sufficient sedative, regardless of the dosage, to enable the patient to get some rest. In our case ordinary sedatives failed and though over 125 grains of sodium amytal were given in three days the patient slept comparatively little. However, the overexcitement was quelled.

(4) For the sake of clarity in the studying of this group, and until more definite findings are brought forth, it is suggested that these cases be called Bell's Mania, after the original observer.

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CONCERNING THE CAUSE OF DEATH IN CERTAIN PSYCHOSES.

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Among the tragedies of hospital experience is the fate of certain cases of acute mental excitement which in spite of the most scrupulous care terminate in death, usually within a few days of admission to hospital. While most of these cases are rather uncooperative in examination and treatment, it is usually possible to say that there is no particular physical condition demonstrable that would account for the exitus. Because of an elevated temperature and some changes in breathing we think at times of pneumonia, at other times because of circulatory difficulties we are inclined to consider a heart condition; but in the cases we are considering such assumptions are unsupported by physical findings. Among our autopsied cases only one showed signs of capillary bronchitis; otherwise we could not satisfy ourselves of the presence of any definite physical disease which would account for the fatal issue.

When we turn to the literature we find that acute lethal excitement has been discussed by Alzheimer, Binswanger and Berger, Thoma, Kozowski, Steck and others. The cases are variously reported as acute delirium, acute dementia præcox, catatonic death, exhaustion death, etc. In order to compare the findings in these cases with our own material, it seems in order to quote some of the authors.

Scheidegger¹ (1929) admirably reviewed the literature up to the time of his report, and discussed 43 cases who died at Burgholzli from 1900 to 1928. Of those cases 17 were definite schizophrenics, 22 probable ones, and 4 were cases of epidemic encephalitis. Post-mortem findings consisted in some cases of cerebral congestion and œdema. In two cases acute brain swelling was suspected, pial œdema was found. Visceral congestion was rather pronounced in a large number of cases. Subcutaneous and muscular hemorrhages were encountered. The mentioned autopsy findings and clinical observations did not reveal any cause of death other than catatonia. Considering the mental picture of continuous

psychomotor excitement, rapid loss of weight, fluctuation of temperature, he assumes that the changes are of central origin.

Bamford and Bean² (1932) studied a large number of cases which they labeled "acute dementia præcox" and published three records. Among other findings they give the following: brain showed intense congestion, the small capillaries of the cortex being especially pronounced. There was acute congestion in the calcarine, crural and Rolandic areas. Spleen showed marked congestion and extravasation of blood pigment. Liver showed engorgement, severe congestion confirmed by extravasation of blood. Kidneys showed intense general and local congestion. There was thickening and fibrosis of vessels in other organs and glands. They conclude that the disease exhibits a constant and characteristic pathology which may be summed up thus:

1. Infantilism of the cardio-vascular system.
2. General fibrosis of the organs and endocrine glands.
3. A large complex type of cerebrum.

In our hospital system Derby³ (1933) reviewed a large number of cases. He rejected many as misdiagnosed. The remainder he considered fit for the group of "exhaustion-death." Eighty per cent of his cases died within two weeks of admission, 10 per cent within 48 hours. He summarizes his material as follows: "If a typical case of exhaustion may be analytically demonstrated we have on entering notably dehydration, fatigue, but actually disturbed with increased pulse rate and with some degree of temperature elevation. There is frequently a reduced blood pressure and often signs of cardio-vascular disturbance rather than pulmonary involvement. . . . Clinical laboratory results coincide with a picture of toxemia and show no outstanding features. . . . Eight out of 20 autopsied cases showed marked infectious and toxic evidence for the clinical picture. In 8 per cent of autopsied series, anatomical findings were lacking to account for death on an infectious basis. The morbid anatomy present in the group was an expression of toxemia and terminal acute cardiac dilatation."

OUR MATERIAL.

We observed a considerable number of cases of the type in question over a period of several years. Among those cases was a number who were on the verge of break down but who either

spontaneously improved or perhaps showed progress in response to treatment. The majority however, died. Of those who died 22 cases were carefully studied particularly as to the clinical course. Seven cases were autopsied.

The cases studied were admitted to Manhattan State Hospital during 1929-1934. They were all females. Their ages ranged from 21-34. One case was a re-admission and another had indefinite mental episodes all her life, the rest were first admissions. Physical examination upon entrance including routine laboratory tests, was negative. The acute state of illness lasted from 4-20 days. In one case the cause of death was given as nephritis which was doubtful, in another capillary bronchitis was found. Causes of death in other cases was given as exhaustion following continuous excitement. In the cases autopsied findings did not indicate any other cause than given.

Clinically these cases were:

Definite and probable schizophrenias of the catatonic type.....	12
Post-partum psychoses, of catatonic type.....	6
Manic-depressive psychoses of manic and mixed type.....	4

In the post-partum group there was no history of toxic-infectious or exhaustive element. In only one case was delivery somewhat difficult; however, a mild toxicity during pregnancy can not be entirely ruled out.

The following cases illustrate:

CASE I.—Female, age 23 of Jewish race. Born in U. S. Early development believed normal. Completed high school and studied art. Occupied herself in the line of domestic art. There was no history of diseases, injuries and toxic influences. Menstrual cycle rather irregular. Married three years, marital adjustment poor. Married against advice of her family to a man of different faith and apparently suffered conflict. Did not wish to have children and became quite upset when she became pregnant. Later however, was quite enthusiastic about expected child. Patient is described as an egotistical, self-centered, unstable individual with cravings for superior things. She was of pyknic type, somewhat obese, showing dysplastic features. Impulse life insecure.

Psychosis began 11 days after what was believed to be a normal delivery. While home she became fearful, restless and suspected danger for her child. She became excited, talked along religious lines and appeared to react to hallucinations. On the ward patient was in a mute, stuporous state, changeable, with continuous psycho-motor unrest. Her temperature was fluctuating, pulse was accelerated, she appeared toxic, showed cyanosis of extremities

and transitory capillary skin reactions. Heart action was weak, excessive. She expired after a few days hospital residence.

Autopsy.—Macroscopically: Brain appeared rather large, congested, oedematous and swollen. Lungs showed marked engorgement. Heart negative. Coronaries rather small, having thin walls. Aorta rather small. Liver congested, showed degenerative changes. Pancreas considerably engorged. Adrenals broken down. Kidneys engorged. Sex organs, no signs of infection.

Microscopically.—Ovary rather congested. Spleen hemorrhagic. Kidneys engorged. Liver showed swelling and places of necrosis. Lungs engorged and oedematous. Pituitary, marked hyperæmia. Nerve tissue negative. Evidence of considerable opening of visceral and glandular capillaries.

CASE 2.—Female, age 29, Slavonic race. Early development normal. Normal school record. No history of diseases, injuries or toxic influences. Patient described as a good mixer having various interests, good intelligence, impulse life strong. She presented a moderately athletic type with masculine features. Menstrual history normal. Married about one year previous to admission and had a normal delivery. Two days after delivery she became excited, restless, afraid of impending danger to her child; was noisy, screamed and yelled. On the ward patient was in a mute, stuporous state, rigid and drooling. Had to be tube fed. Was incontinent. During subsequent residence her temperature began to fluctuate, pulse was accelerated, at times imperceptible. She showed toxic features and circulatory disturbance. Blood pressure was falling. Heart action was weak. She expired after two weeks of acute illness.

Autopsy.—Heart and aorta normal. Lungs had a mottled reddish patchy discoloration in both lower lobes. Gastro-intestinal tract showed marked congestion of smaller vessels. There was a patchy discoloration of the mucosa. Liver was increased in weight and in resistance. Spleen and kidneys were markedly congested; many small petechial hemorrhages. The brain was very congested and oedematous. Blood vessels appeared sclerotic.

Microscopically.—Lungs showed hemorrhages in some places, otherwise congestion with some extravasation of the cells, and oedema. Heart negative. Spleen hemorrhagic. Kidneys hemorrhagic. Brain, perivascular spaces increased, vessels sclerotic. Capillaries, sparse. Smaller vessels were tortuous.

CASE 3.—Female, age 28, German race. Normal development. Normal school record. Menstrual history irregular. Married for six years, had two children, one of whom died of meningitis. Marital adjustment good. No history of diseases, injuries or toxic influence. Described as a rather reserved, quiet person, limited interests, insecure impulse life, unstable.

Psychosis, sudden onset. Woke up at night, became excited, screamed and laughed. This followed by disturbed aggressive behavior. She showed continuous psycho-motor excitement. On the ward patient was entirely inaccessible, assumed rigid posture; facial expression was blank. During her residence she showed signs of capillary bronchitis from which she recovered. Later her temperature began to fluctuate, showed toxic features;

peristaltic unrest; has been rapidly failing. Showed considerable circulatory disturbance, heart action was very weak. She expired after two weeks acute illness.

Autopsy.—Lungs showed congestion with œdema. Heart negative. Gastro-intestinal tract congested, appeared diffusely red. Smaller vessels rather prominent. Liver engorged. Kidneys extremely congested. Pelvic organs negative. Spleen congested. Brain congested, appearing swollen. Intracranial fluid increased. Blood vessels thin.

Microscopically.—Gastro-intestinal tract hyperæmia with tendency toward necrosis of the mucosa. Pancreas showed moderate fibrosis. Adrenals markedly hemorrhagic. Spleen congested, the cells loosely held together. Kidneys and liver congested. Lungs, hyperæmia with blood extravasation. Uterus, hyaline degeneration of vessels. Brain, vessels thin. Capillaries thickened, other places narrow, again some obliterated.

CASE 4.—Female, age 21, born in U. S. Father died in a state hospital. Patient's early development was normal. Had a normal school record. Held a good position which she resigned a few months previous to admission because of feeling tired. Menstrual history negative. Avoided the opposite sex; she was seclusive and had only a few friends. She presented an asthenic type. There was no history of diseases, injuries or toxic influences.

Psychosis of three months duration. Began with fatigue and ideas of insufficiency. Later developed ideas of reference and persecution. Shortly before admission became acutely excited, talked incoherently, hallucinated and refused food. On the ward patient was inaccessible, restless, impulsive and negativistic. Was rigid, incontinent and had to be tube fed. Shortly after admission, temperature began to fluctuate, pulse was accelerated and she appeared toxic. Heart action was the same as in other cases. In the final stage, urine showed albumen, casts and red cells. She showed conspicuous capillary skin reactions. She expired within two weeks of acute illness.

Autopsy.—Heart negative. Lungs showed congestion and œdema. Gastro-intestinal tract showed congestion and hemorrhages. Liver extremely hyperæmic. Pancreas congested. Spleen engorged. Kidneys showed considerable engorgement, being bright red in color. Pelvic organs congested. Brain, meninges engorged. Intracranial fluid increased. Brain appeared large, œdematous and swollen. Pituitary rather hyperæmic.

Microscopically.—The same changes as noted in previous cases. Outstanding features are congestion and hemorrhagic conditions. Capillaries showing considerable change.

SUMMARY.

Clinical Features.—The majority of cases showed sudden onset of illness, there was a history of delusions and hallucinations, they showed extreme psychomotor excitement, restlessness and resis-

tiveness to the point of negativism. They screamed and yelled as if in reaction to terrifying hallucinations. They showed an apprehensive affect changeable with blankness, stuporous rigidity, wetting and soiling, were mute and had to be tube fed in many instances. The manic-depressive cases who showed at onset a manic syndrome, were in the final stage undistinguishable from the others. Sensorium could not be evaluated.

Physically, the patients showed rapid bodily decline, severe metabolic disturbances, fluctuating temperature, leucocytosis. Blood pressure was falling. They showed toxic features such as loss of strength, loss of weight, digestive disturbance, increased pulse rate, dry tongue, and reflex symptoms such as flushing of the face, peristaltic unrest, circulatory disturbance, etc. Capillary skin reactions of the type of "flare" of Lewis were frequently observed. Occasionally stasis in the vena cava inferior was suggested by dilatation of superficial veins of the mammary region and that of pelvis and thighs. In the final stage, urine would show albumen, red cells, casts, increased specific gravity, etc., due apparently to intense congestion of the kidneys as will be shown later. The most interesting feature was the heart-action. The heart in such cases beats vigorously. The contraction is very weak, volume small, suggestive of emptiness, and of arterial oligæmia. Finally it comes to cessation of the heart-action. We believe however that paralysis of the heart can be excluded, and that what really happens is a collapse of the cardio-vascular system. All cases expired under the same circumstances.

Autopsy Findings.—Outstanding feature was that of practically uniform visceral congestion to the point of hemorrhagic states. The brain weighed from 1100-1434 gms., meninges often quite congested. Brain usually found to be large, boggy, congested, œdematous, at times suggesting acute swelling. Intracranial fluid usually increased, intracranial vessels in some cases proved to be rather thin, often appearing sclerotic. In some perivascular spaces were prominent. Smaller vessels undergo considerable change, showing some degeneration, being tortuous in their course. The capillaries in some places thickened, others obliterated, again some showing very thin walls and being rather narrow. Spleen was found almost universally hemorrhagic and broken down. Liver and kidneys extremely congested, at times showing swelling and in

one case the liver showed small areas of necrosis. Adrenals were hemorrhagic in two cases. Pancreas showed intense congestion in two cases. Pituitary was quite engorged in several cases. The gastro-intestinal tract showed at times uniform congestion. In some cases the tract appeared diffusely red, and a network of venules stood out distinctly. Also, spots of bleaching were observed. Lungs showed intense hyperæmia, wide opening of capillaries, extravasation of blood and œdema in a number of cases. In one case there was evidence of capillary bronchitis. Pelvic organs showed the same picture of congestion. In the post-partum cases there was no evidence of infection in the genito urinary tract. No foci of infection were found in other cases. On the whole the picture was throughout suggestive for a toxic process.

COMMENTS.

While different workers on the problem may have had different points of departure in their studies and have emphasized different points of their observation, it is rather gratifying to us that when we examine their objective data we find a striking similarity of features both in the clinical course and in the autopsy findings, which coincide with our findings. While the cases have been differently diagnosed psychiatrically, the clinical manifestations during the acute illness were practically the same, and therefore such difference in classification does not handicap conclusions.

We reached the same conclusions as Derby did in reference to toxemia. The post-mortem findings in the cases of Scheidegger and Bamford and Bean with reference to vascular changes coincide with our findings. We believe that pathology or clinic separately cannot give proper interpretation. Only a careful evaluation of findings both clinically and pathologically may throw some light upon such a complex problem.

In this connection we wish to refer to a former paper concerning psycho-somatic phenomena and capillary circulation.⁴ Studies upon the female generative phases impressed us with the possibility that the reticulo-endothelial system may play an important rôle in psycho-somatic manifestations, and may be to some extent considered as a safeguard of the individual against various injuries, including toxic-infectious and psychic factors. Particularly the

capillary circulation attracted our attention for the reason that we observed in the cases studied various capillary manifestations which in some instances appeared to have a close relationship to mental manifestations. We reviewed certain anatomical and physiological data and also certain experimental and clinical data relating to the capillaries in conjunction with our findings; and reached the conclusion that capillary dystonia when present, of whatever origin it may be, will considerably impair the tissue exchange and may produce changes in distribution of the blood volume in the body. A quite important factor appears to be the selectivity of capillaries of different visceral levels to the same noxious agent. For instance, histamine constricts the capillaries of the lungs and liver and widens the brain capillaries. The capillaries also respond quite differently to the amount of poison.

While the capillaries are believed to be under the control of the sympathetic nervous system it is also believed that the Rouget cells of the capillaries may have their own contractibility. It seems logical to think that in case the bodily capillaries are once attacked, their response may cause considerable visceral dysfunction. Abnormal opening or closure of visceral or glandular capillaries may cause hyper- or hypo-nutrition of a certain part with consequent changes in secretion and function. Prolonged closure of capillaries of an organ may lead to fibrosis and result in invalidity of such organ, which in turn may result in neuro-humeral dysequilibrium. In such created states of dysequilibrium psycho-biological conflicts of the individual may gain considerable ground with the result of deepening the process, since psychic states through their influence upon the vegetative nervous system may produce further dysfunction. Such psychic factors may also be the origin of capillary dystonia.

In the light of the above and considering the clinical and autopsy findings we believe that we deal in such cases with a state of capillary toxicosis. The toxemia appears to be endogenous in its source, for the reason that careful investigation fails to provide evidence of external origin. The conclusion is supported by the studies on traumatic shock. The medical research committee has conclusively shown that traumatic shock is due to action of toxic substances found without interaction of micro-organisms, and distributing themselves through the body in the circulating blood.

It is possible that in the post-partum cases the act of delivery plays the rôle of trauma. We must say however, that we rather consider multiple than unitary causes responsible for the condition.

While we do not know the exact nature of the toxic substances at work in our cases, we may perhaps identify them with the H-substances of Lewis (related to the histamine group.)

CONCLUSIONS.

If our observation and evaluation of data are correct, we may draw the following conclusions:

The question of loss of weight as a result of refusal of food by some patients cannot explain the rapid physical failure since in most cases sufficient nourishment is provided by various ways of feeding; although improper assimilation of food may be an aggravating factor. Considering the state of cerebral capillaries we may perhaps assume that the trophic changes, the rapid bodily decline and fluctuation of temperature could be of central origin, due to hypothalamic dysfunction as suggested by Steck and discussed by Dreyfuss and Scheidegger.

The capillary dystonia may account for the fibrosis encountered in various organs and glands, and may perhaps be partially the source of the non-specific histopathology of the brain, viscera and glands.

The cause of death in these cases appears to be the capillary toxicosis as a result of liberation in the body of toxic substances which are tentatively identified with the H-substances of Lewis. Such toxicosis leads to an extreme opening of visceral capillaries, and also handicaps regeneration of the blood, which together result in arterial oligæmia and consequent cardio-vascular collapse.

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SOME PSYCHOLOGICAL CONCEPTS RELATED TO A VIEW OF MENTAL HEALTH.

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This paper attempts to present briefly some relationships between a few of the more important psychological concepts and a view of effective mental functioning. The latter term is recognized as being very broad, and consequently subject to varied interpretation and controversial discussion. But, using it provisionally as referring to a condition opposed to mental instability and abnormality, we may endeavor to give it more definite meaning in terms of certain concepts descriptive of mental functioning. It is our aim, therefore, to interpret consistently these basic concepts, in such a way as to reflect their psychiatric and mental hygiene implications.

First of all we must recognize that any psychological concept derives its true meaning from the system of thought of which it forms a part, rather than from the name by which it is symbolized. Thus, the term "instinct" has quite different significations when used by Watson and by McDougall. For the former, it represents a chain of reflexes; for the latter, it implies an inborn purposive drive or motive. So, too, "intelligence" may refer to some capacity underlying effective behavior, or to the effectiveness of the behavior itself. There is no controversy here, any more than is the case when any two disciplines use the same word in different senses.

Our terms may therefore be most clearly presented by first giving an outline of the point of view from which their meaning is derived. This is most easily accomplished by defining the concept "behavior"; for since all psychologies deal with some aspect of behavior, the field that they actually explore is marked off at the outset by the aspect selected. Thus behaviorism limits the meaning of "behavior" by adopting the stimulus-response formula; McDougall and Freud, by considering it always as the purposive expression of "hormé" or "libido." Subsequent analyses and observations can never bring such systems together, for they deal with

different fields of enquiry; and while each system constitutes a perfectly legitimate approach, its ultimate justification lies in the degree to which it contributes to a practical interest.

It is quite permissible, therefore, to define "behavior" so that the field thus marked off includes some of the outstanding problems in human functioning. Without further ado, we may accordingly state that, for us, "behavior" represents organized movement. By this we mean that it is more than movement. It is organized in the sense that it has an end or purpose; and the purpose is far more pertinent to our practical interest than are the particularities of movement. To draw attention to this fact, we may use the term *process* as representing the principle of organization. In every act of behavior, the individual is "doing something," "achieving"—rather than merely responding mechanically to a stimulus, or expressing an "instinct" or a "drive"; and only in terms of such a positive, forward-looking view can we legitimately apply the terms "adjustment," "creation," "construction," "attitude" to human behavior. Almost every one of the important concepts used in describing normal or abnormal development, implies the *process* view of "behavior." All we are doing here, therefore, is to make explicit recognition of this fact, since our interest lies in the field of development.

Since all behavior represents achievement, different acts of behavior may vary in two ways: (a) the direction of the achievement—as when one act culminates in writing a poem, another in making a chair; (b) the complexity of the organization or *process*¹ involved—as might conceivably be the case with throwing a stone at a dog, and reading Kant's *Critique of Pure Reason*. The first variable is of prime importance to all phases of education, since the task of the educator is most certainly concerned with directing the achievements of his pupils into certain channels rather than others. The second, which must also be taken into consideration by all who are attempting to foster human achievement along worthwhile or healthy lines, may conceivably depend upon the endowment of the organism as well as upon his training; for some children may be

¹ The terms "process" and "organization" are not synonymous. The latter suggests order, it is true, and order is meaningless save in reference to "purpose." But "organization" often implies a static condition, an order achieved. "Process" essentially refers to the dynamic aspect of "achieving."

capable of more intricate organization in their behavior-acts than others.

The second variable—involving differences in complexity of organization—may conveniently be considered first. Those children who, without reference to training, are potentially capable of achievements involving more complex organization, may legitimately be called the more “intelligent” children. “Intelligence,” therefore, stands for that individual difference which corresponds to degrees of “process” potentially present in the behavior of bright and dull people. The potentially bright may not achieve intelligently; but here we are using terms in a confusing way. Individuals who, without reference to training, are potentially capable of very complex acts of behavior, may be so directed in their achievements that they construct the most intricate mathematical creations, or the most obstinate delusions of the paranoiac. Both constructs manifest intelligence of a high degree; but only the first would ordinarily be called “intelligent.”

In other words, “intelligent behavior,” as usually conceived, involves our second variable—the degree of “intelligence” available to the individual. But it involves the first variable, the direction of the achievement, more particularly. “Intelligence” is merely the degree of “process” or “complexity” possible to the individual. All individuals will, by definition, achieve in proportion to their “intelligence” in this sense. The important variable to education, to mental hygiene, to psychiatry, is that of the *direction* of process; and as a tentative hypothesis, we may put forward the suggestion that *an individual is mentally healthy in proportion as his achievement in worthwhile directions is a true representation of his intelligence.*

This suggestion is not proposed as a solution to problems of mental health. It makes no assertion whatever. It simply states the problem of what constitutes healthy development, in terms of the concepts already defined. Regarded in this way it may assist in directing our thought in regard to personality deviations, as we hope to show as we proceed. But at this stage it does nothing more than isolate the inevitable conclusion of the position we have taken; for it is implied in the meaning we have given to “behavior,” “process,” “intelligence.”

Exception may be taken to the inclusion of the term "worthwhile" in the above statement. Having ethical significance, it may be deemed quite out of place in a scientific discussion. We therefore hasten to add that while this is a justifiable criticism from the point of view of positive sciences, such as physics and chemistry, mental hygiene pertains rather to the normative sciences. Further, we may translate the term "worthwhile" into something more definitely psychological, if we distinguish between two concepts which are often confused—the concepts "feeling" and "satisfaction." We shall then find our hypothesis to read that *an individual is mentally healthy in proportion as his achievement in the direction of "satisfaction" (rather than "feeling") is a true representation of his intelligence.*

Let us examine this distinction between "feeling" and "satisfaction," in order that we may then discuss our hypothesis more fully. Following the English psychologist, Ward, we may contrast "feeling" with "sensation," in that while the former is apprehended always as pertaining to the *subject*, the latter inheres in the *object*. In experiencing pain, the pain is known objectively—as an object of thought. The unpleasure accompanying the pain, is a quality of the self, the experiencer, the knower. Feeling in this sense, (pleasure-unpleasure) may therefore be termed "self-affect." It is essentially ego-centric.

But in the act of knowing, there is another affective aspect. Activity as such involves achievement—according to our initial definition; and the primary quality of the experience engendered by achievement is what we here call "satisfaction." Feeling is always a *subjective (self)* quality; satisfaction is a quality of an act. Satisfaction never has self-reference; it is never divorced from the act, nor is it concerned with the end result only. Essentially it is tied to the act in process towards completion, and may conveniently be called "allocentric-affect."

Activity may be so directed, therefore, that the major interest or intention is concerned with the feeling-tone that accompanies the behavior or its end result—in which case it may be said to be ego-centric; or it may be entirely devoid of this characteristic, the intention or motive being wholly constituted by the activity itself—in which case it is allocentric or objective.

Justification for this distinction must ultimately be given in terms of experimental findings, systematic arguments, and practical applications. The first two lines of support will be discussed elsewhere. We shall limit ourselves here to the consideration of a few practical implications which will assist in clarifying the meaning of these two terms.

The task of education could well be stated as the development of objectivity in behavior. By this we mean that the well-developed individual would be one whose motives were *un-self-ish* (in the psychological, rather than the moral, sense), whose interests were directed towards doing things, constructive achievements, creation, discovery—not for any personal glory or esteem, nor for the intrinsic satisfaction pervading them. Pursuit of these interests will be satisfying; but the desire for satisfaction will not be present in the intention of the doer. Interest in things, in other persons, their achievements and experience, will be dominant. Education will accordingly not foster self-contemplation. On this principle hangs one of the important arguments for pre-school training with other children. It is the basis of “individualized” education—so often misconstrued in the direction of drawing attention to achievement as *one's own*, building self-confidence, avoiding feelings of inferiority, and like ego-centric notions. In reality, individualization implies adjusting the tasks to the intelligence of the child, in order that these self-affect reverberations will *not* ensue. Avoidance of extraneous and explicit motives, of artificial goals (rewards, punishments, praise, blame, etc.) depends for its justification upon the same central principle; as does the limiting of competition to the function of clarifying the nature of an objective goal, particularly in the direction of greater refinement and intricacy (as in sport, for example). Ordered progress in achievement will be its own reward, without recourse to justifications emanating from feeling.

From this point of view, the content of education will therefore involve adequate opportunity for allocentric endeavor. Other values will, of course, have to be included—values pertaining to the advancement of human culture and creativeness, to the handing on of past achievements by pedagogical shortcuts, so that each generation may add its quota to human discovery. But our emphasis here is on the need for a satisfying content, by means of which objectivity may be fostered. And the essential guarantee that the

content will be worthwhile in this sense, is that it be presented with due regard for the relational or process complexity of the tasks involved—whether these pertain to the realm of individual achievement, or of sympathetic and co-operative endeavor. Educational interests will therefore center on the level of complexity, rather than on the outside utility of the subject matter; and psychology can contribute to this program in proportion as its analyses reveal the functional or process nature of the achievements whereby purposeful objectivity is fostered.

Turning from educational illustrations pertinent to the distinction we have made between feeling and satisfaction, between egocentricism and objectivity, let us consider briefly some implications in the wider sphere of social living. Rabid individualism, as a philosophy of life, is not only out of harmony with a satisfying view of personality, but also contrary to a systematic account of human achievement. Man, in a world of other men, can be regarded as self-ishly motivated only if we are willing to regard social adjustment as a compromise, the classical expression of which was clearly given by Thomas Hobbes. This compromise involves constant conflict between the egoism of the individual and the rights of other ego-motivated persons—conflict which is continuously being resolved with more or less influence on the achievement and comfort of the sufferer. Once we commit ourselves to such a philosophy, our account of human motivation is already determined, and takes the form of postulated "drives," urging the individual from behind in pre-established egoistic directions. Stress and strain, withdrawal from reality, security, libido, instincts, independence, self-expression, sublimation and the like, are terms that are inevitable; the very notion of conflict is itself absolutely laid down when we accept the Hobbean postulates regarding the meaning of life—rather than being a scientific construct, as many would have us believe.

The resulting *impasse* is very great in the field of psychopathology. Starting with a view of human motivation that is essentially self-centered, we yet realize that all mental mechanisms which, when carried to the extreme, lead to or constitute pathological functioning, are characterized by ego-centricism. Surely, therefore, we should seek an interpretation of human experience that avoids this paradox. The phrase "carried to the extreme" can have meaning only if some place is given to the opposite of egocentric behavior.

This, we claim, the distinction between feeling and satisfaction endeavors to do. By centering our attention upon achievement, on process towards an objective goal, we set out to analyze human behavior in its positive aspects, and thence to deduce principles that will assist in directing human activity along lines that make for individual and collective accomplishment. As in the case of other views of motivation which we have criticized, we are here accepting a philosophy of human living prior to the choice of our concepts. But that is so in all psychologies. And since the view we have taken, with its consequent definition of "behavior" as achievement, appears valuable in the practical field of development, it is justified at least to that extent.

We may now return to our original hypothesis. In proportion as an individual's achievement is objective, so is he functioning in a manner conducive to sound adjustment, co-operative endeavor, social living in the fullest sense of that term. Egocentric achievement is the antithesis of all this. Conceivably, therefore, it should be possible to discover differences in the behavior of stable and unstable individuals which reflect these opposing characteristics—objectivity and egocentricism. Alertness to objective stimulation might conceivably be related positively to objectivity; fluctuations in alertness, to fluctuations in objectivity of behavior. Test results which show reliability with normal subjects when given at different times, might show less reliability when given repeatedly to pathological cases—as is the common observation in regard to tests of intelligence. The degree of apparent "deterioration" as indicated by such tests is often very much greater at some times than at others. Reaction-times to word-association tests may sometimes be quite normal with neurotics and even psychotics; yet frequently these same individuals find difficulty in responding immediately, or even at all. Could such variations be measured, and the measures related to each other by statistical techniques, might they not reflect in their relationships some characteristics of the underlying pathology?

This type of enquiry underlies some researches now being pursued, the preliminary findings of which are to be reported in a subsequent article. The factors thus sought, represent at first merely hypothecated variables which are necessary to the explanation of observed relationships. Their ultimate interpretation will presumably be in terms of aspects of the personality which condition efficient functioning or achievement.

PHYSICAL THERAPY.*

By HARRY F. HOFFMAN, M. D.,

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Various forms of physical therapy have been employed at the Allentown State Hospital since its opening in 1912 and discussion of physical therapy with some of my friends at other institutions shows that this subject is getting almost as much attention in psychiatric hospitals as in general medical practice. Recognition of the importance of physical therapy is shown by the formation of the Council on Physical Therapy of the American Medical Association, by the time allotted to this subject in the curricula of some medical colleges and by the organization and expansion of physical therapy departments in general and special hospitals.

Questionnaires were sent to 164 hospitals, namely: 12 Veterans Administration, 21 Canadian, 14 private and 117 public civil hospitals in the United States; 100 replies were received from: 11 Veterans, 10 Canadian, nine private and 70 United States civil hospitals, and I am now thanking those of you who furnished the basic data for this communication. Five institutions have installed equipment and are about to put it to use, eight others have made provision for physical therapy departments under current appropriations or in buildings under construction. Of the various groups, Veterans Administration Hospitals whose personnel had experience with physical therapy during the war, have the most complete physical therapy equipment and use it most extensively. Five institutions report using no form of physical therapy and 18 confine their activities to hydrotherapy. Inasmuch as 100 replies were received, the figures may for convenience be thought of as expressing percentages.

HYDROTHERAPY.

Hydrotherapy is the form of physical therapy most widely used—95 hospitals employing it as against five which do not. It likewise is

* Read at the eighty-eighth annual meeting of the American Psychiatric Association, Philadelphia, Pa., May 30-June 3, 1932.

in use longer than any other procedure. The median duration of its employment is 18 years and 17 institutions have used hydrotherapy 30 years and over, one 74 years. The average equipment is six continuous bath tubs, one or two hydriatric outfits consisting of Baruch control table with spray, needle, shower, sitz and bidet baths and Scotch douche and 10 pack tables. In addition, eight institutions have whirlpool baths, colonic irrigation equipment five, swimming pool three, vapor or steam bath three. The average hospital gives about 1000 treatments to about 100 patients per month, though two institutions report over 12,000 treatments per month and three report more than 500 cases treated per month. A few state they have discontinued hydrotherapy on account of water shortage.

The indications on which hydrotherapy is prescribed are principally disturbed states, manic or catatonic, and for sedative and stimulative effects. Next in frequency are depressed and toxic states, insomnia, psychoneuroses, arthritis, anemia, alcoholism and drug addiction. The returned questionnaires show that hydrotherapy is extensively used in accordance with well established teaching, results generally being regarded as good. In some localities the general hospitals have been taught to handle acute alcoholics by hydrotherapy thus obviating committing some cases of delirium tremens and acute hallucinosis. Dr. Chapman of Sheppard and Enoch Pratt Hospital, mentions an accessory psychic advantage—hydrotherapy giving some patients the opportunity of over-coming feelings of organic inferiority and self-consciousness by demonstrating that most people are physically quite similar.

HYDROTHERAPY.

Years in use.	Equipment.	Treatments per month.	Cases per month.
1-4 10	Continuous	None 9	None 9
5-9 9	bath tub:	1-49 5	1-24 15
10-14 13	1-4 26	50-99 4	25-49 12
15-19 8	5-9 18	100-199 ... 4	50-99 12
20-24 8	10-14 15	200-499 ... 11	100-199 14
25-29 5	15 8	500-999 ... 15	200-299 5
30 + 17	Hydriatric out-	1000-1499 .. 6	300-399 3
	fits, control	1500-1999 .. 4	400-499 2
	table, show-	2000-2999 .. 13	500 + 3
	ers, etc.:	3000 + 13	
	1 44		
	2 15		
	3 3		
	5 2		
	Pack tables:		
	1-9 12		
	10-19 10		
	20 1		
	Whirlpool		
	baths 8		
	Colonic Irrigation ... 4		
	Swimming		
	pool 3		
	Vapor or		
	steam bath 3		

INDICATIONS FOR HYDROTHERAPY.

Disturbed 19	Psychoneurosis 5
Manic 19	Arthritis 4
Catatonic 17	Anemia 3
Sedative 16	Malnutrition 3
Stimulative 13	Alcoholism 3
Depressed 12	Drug Addiction 3
Toxic 9	Dermatology 2
Elimination 6	Involutional Melancholia 2
Insomnia 5	Neuritis 1

RESULTS.

Excellent or very good..... 10
Good 33
Satisfactory 8
Fair 4

HELIO THERAPY.

Data regarding heliotherapy and actinotherapy cannot always be kept distinct because the sun and most apparatus for radiation therapy give off visible light, the chemically active ultra-violet and infra-red or heat rays. To be precise one should use the term phototherapy for light treatment, actinotherapy for the chemically active but invisible ultra-violet treatment, thermotherapy for infra-red or heat and reserve the term heliotherapy for natural sun ray treatment. The solar radiation consists of ultra-violet, visible light and heat rays, hence is a mixture of the three preceding. Most apparatus gives off mixtures of all three kinds of radiation and classification is made according to the predominating emanation. "Heliotherapy" is generally used in place of "phototherapy" and "actinotherapy" or their joint employment.

Heliotherapy has been prescribed for an average of five years in most of the reporting institutions, though a few have had over 20 years experience with it. Exposure to the sun's rays on porches, roofs or in court yards is the common custom. Patients having active tuberculosis must be treated cautiously, gradually increasing the area of exposed skin as well as exposure time, using Rollier's or a similar formula, sample of which is appended.

Sun Baths.—Give treatments early in morning, or if no sunshine, late in afternoon during warm weather. During cold weather give treatments near midday. Patient should have half hour rest after meals before starting treatment.

1st day,	5 minutes	front and back,	feet and ankles.
2d "	10 "	" " "	to middle of calf.
3d "	15 "	" " "	to knees.
4th "	20 "	" " "	to middle of thighs.
5th "	25 "	" " "	to hips.
6th "	30 "	" " "	to umbilicus.
7th "	35 "	" " "	to level of 3d rib.
8th "	40 "	" " "	to neck.
9th "	45 "	" " "	entire body.
10th "	50 "	" " "	entire body.
11th "	55 "	" " "	entire body.
12th "	1 hr.	" " "	entire body.

No further change without special order. During warm weather shield head from sun.

Phototherapy is carried on with therapeutic lamps of various sizes, carbon filament bulbs giving off more heat and standing rougher handling, platinum and tungsten filament lamps giving more light. The penetration varies approximately with the wattage of the lamp and the surface effect varies inversely with the square of the distance. If massive effects are desired an electric fan may be used to cool the skin.

Actinotherapy is generally carried on with quartz tubes containing vaporized mercury or with carbon arc lamps. Fifty-one (51) hospitals use air-cooled mercury quartz apparatus; 28 have water-cooled equipment and 7 report using arc lamps. Actinotherapy is a relatively recent addition to the armamentarium, thirty installations having been made in the last four years and 26 from five to nine years ago. A newer method of ultra-violet production is the cold quartz apparatus in which high frequency currents are used in a way similar to their use in the neon advertising signs. This apparatus has not been tested sufficiently to establish its value. Infra-red apparatus is in use in 31 hospitals.

The indications on which these forms of radiation therapy are prescribed are anemia, malnutrition, tuberculosis, pulmonary and extra-pulmonary; dermatologic conditions such as acne, psoriasis, erysipelas, cellulitis, carbuncles and furuncles. Various local conditions such as arthritis, infections, lumbago, myalgia, varicose ulcers, fractures, wounds, neuritis and sprains are favorite indications for radiation therapy, and actionotherapy is used extensively in bronchitis, coryza, pyorrhea and eye, ear, nose and throat conditions. The reports from a number of institutions show that employees receive considerable physical therapy and that sick time of employes is thereby reduced. A saving in gauze and bandages is reported due to more rapid healing of wounds and infections.

With ultra-violet one can in a few minutes give the patient a metabolic stimulation practically equivalent to a day spent in the sunshine at the seashore and with much the same resultant sharpening of appetite and feeling of well-being. At Cornell University the incidence of colds in cold-susceptible students has been reduced by ultra-violet. Stubborn cases of psoriasis will often clear up if the lesions are moistened with salt solution before raying. Several depressed cases who believed their acne to be syphilitic, recovered mentally when the skin was cleared up by actinotherapy.

As regards results, the opinions are quite favorable and even moderately enthusiastic, 30 per cent estimating results as very satisfactory or excellent and an additional 45 per cent as good. Twenty-one (21) institutions give more than 500 treatments per month each.

PHOTO—THERMO—ACTINOTHERAPY (HELIO THERAPY).

Years in use.	Equipment.	Treatments per month.	Cases per month.
1-4 30	Outdoor sunlight	1-49... 9	1-24 ... 27
5-9 26	Therapeutic lamps	50-99... 13	25-49 ... 9
10-14 ... 7	Deep therapy lamps.....	100-199.. 12	50-99 ... 9
15 6	Electric light baths.....	200-299.. 9	100 + .. 5
	Air-cooled ultra-violet ..	300-499.. 3	
	Water-cooled ultra-violet.	500 + .. 21	
	Carbon arc lamp.....		
	Infra-red		

INDICATIONS

Dermatology	26	Fractures	8
Anemia	21	Sprains	8
Tuberculosis	21	Furuncles	7
Arthritis	17	Carbuncles	7
Tonic	15	Lumbago	6
Infections	14	Rheumatism	6
Malnutrition	12	Coryza	6
Acne	10	Psoriasis	6
Neuritis	10	Myositis	6
Myalgia	10	Wounds	5
Eye, ear, nose and throat.....	9	Dental	5
Bronchitis	9	Neuralgia	4
Varicose ulcer	9	Obesity	3

RESULTS.

Excellent or very satisfactory.....	14
Good	21
Fair	5
Improved	5

STATIC CURRENTS.

Years ago static currents were extensively used by physical therapists but in our present series only three state hospitals and 3 veterans hospitals operate such machines, making static treat-

ments used by only 6 per cent of those reporting. Seven additional institutions have equipment but have discontinued its use. Three institutions give more than 50 treatments per month and two treat more than 50 cases per month. The indications are arthritis, arteriosclerosis, obesity, myositis, manic depressive and psychoneurotic cases and for sedative and tonic action. Results are said to be striking in recent injuries such as sprains and strains. The scantiness of use of static currents is doubtless due to the erratic behavior of the machines, which require much care to keep them sufficiently moisture free for satisfactory operation.

LOW VOLTAGE CURRENTS.

Galvanic, faradic and sinusoidal apparatus is on hand in 31 institutions and is in use in 28 of them. Ten institutions have used such currents only during the past 4 years. The most popular equipment is the Morse wave generator. Nine users give between 50 and 99 treatments per month and 10 give more than 100 treatments monthly but most users treat less than 10 patients per month. The indications are constipation and intestinal stasis, paralysis, neuritis, arthritis, muscular atrophy, ulcers and scar tissues. Other uses are muscle testing, electrolysis, ionization and treatment of recent injuries and to promote absorption of exudates. The results in atonic constipation are at times striking. An extreme case showed retention of a barium meal for 18 days and after a course of abdominal sinusoidal treatment reached a 48 hour emptying time.

LOW VOLTAGE CURRENTS.

Years in use.	Equipment.	Treatments per month.		Cases per month.	
1-4 10	Morse wave. 17	None	3	None	3
5-9 5	Polysine ... 10	1-9	3	1-9	16
10-14 2	Wallplate .. 7	20-29	1	10-19	3
15-19 1	Victor 5	30-49	5	20-29	2
	Zander 2	50-99	9	30+	3
	Fisher 1	100+	10		
	Bristow coil. 1				

INDICATIONS.

Constipation	14	Post operative adhesions.....	2
Paralysis	14	Flat feet	1
Neuritis	6	Hirschsprung's disease	1
Muscle stimulation	6	Hysteria	1
Arthritis	5	Lumbago	1
Muscle atrophy	4	Otitis media	1
Diagnosis	4	Obesity	1
Ulcers	3	Sprains	1
Scars	3	Sciatica	1
Ankylosis	2		

RESULTS.

Very good	2
Good	3
Improved	1
Fair	1

HIGH FREQUENCY.

Equipment for high frequency treatment is on hand in 46 hospitals, six of which report no cases treated, mostly because apparatus is just being installed. Twenty installations are in use less than five years. Five hospitals have the extra large machines specially designed for pyretotherapy. Thirteen institutions are using high frequency for fever induction in paresis. Ten hospitals give from 50 to 99 treatments per month, 21 give more than 100 treatments monthly though very few departments treat as many as 20 cases per month. Six hospitals do surgical diathermy for small growths, major operations apparently being very rare. Medical indications other than for induction of fever are arthritis, fractures, pneumonia, sprains, hypertension, neuritis, bronchitis and arteriosclerosis. The writer prescribes diathermy to the hepatic region in sallow depressed restless cases who give a history of jaundice. Cardiac cases with anginal symptoms are at times relieved by mild diathermy. Spasmodic affections like singultus or irritating coughs can often be relieved with diathermy using the indirect method for laryngeal application. Those who use the high frequency currents hold them in high esteem rating the results as very good or excellent in a large proportion of cases.

HIGH FREQUENCY.

Years in use.	Treatments per month.	Cases per month.
1-4	None	None
5-9	1-19	1-9
10-14	20-49	10-19
20 +	50-99	20-29
	100 +	30-49
		50-99
		100 +

INDICATIONS.

Arthritis	18	Encephalitis	2
Paresis	13	Myositis	2
Fractures	10	Cardiopathy	1
Hypertension	8	Cholecystitis	1
Neuritis	7	Insomnia	1
Pneumonia	7	Hysteria	1
Sprains	7	Lumbago	1
Surgery	6	Otitis media	1
Bronchitis	5	Myalgia	1
Arteriosclerosis	4	Synovitis	1
Asthma	2	Schizophrenia	1
Paralysis	2	Sciatica	1

RESULTS.

Very good	9
Good	9
Fair	1

PYRETOTHERAPY.

In addition to high frequency currents, various other methods for fever induction are in use. Malaria inoculations are reported by seven hospitals, typhoid and other non-specific proteins by three and electric blankets by three hospitals. A short wave radio transmitter is in use at the New York Psychiatric Institute where 48 treatments were given per month to five cases of general paralysis. Indications for fever therapy other than neurosyphilis are cellulitis, arthritis, encephalitis and toxic conditions. This type of treatment is reported as giving good results with remissions in some cases.

ROENTGENTHERAPY.

In response to questions about Roentgentherapy most hospitals told of having equipment which is used for diagnosis only. Five institutions send cases for Roentgentherapy to affiliated hospitals, six others give an occasional treatment. Three give from one to 19 treatments per month, five give 20 to 29 treatments per month and two give more than 30 per month. The reasons for Roentgen treatment are usually malignancy or some dermatologic disorder. Other indications are uterine fibroid, keloid or other scar tissue, adenitis, carbuncle and endocrine disturbance. While such treatments are dangerous, many hospitals could expand their activities in this line by getting the interest of a radiologic consultant under whose supervision much fine work could be done. Acute inflammatory conditions like carbuncles, furuncles and paronychias can often be aborted in the early stages before pus has formed, at times obviating necessity for incision. As less than half an erythema dose is required such treatment is entirely safe. Excellent results can be obtained in adenitis and uterine fibroid if not polypoid. Not only malignancies but cases of cervicitis which look precancerous are satisfactorily treated. Dermatologic cases are attended with more risk and as many such cases can be almost equally well handled by actinotherapy, the latter is to be preferred.

MISCELLANEOUS PHYSICAL THERAPY.

So as to not overlook other special forms of physical therapy information was requested as to any other measures in use. Several replies referred to occupational therapy but as this has become a separate activity it will not be gone into in this paper.

Medical gymnastics and corrective exercises with muscle reeducation are in use in 25 institutions and manual massage is reported as employed in 31, nine institutions employ mechanical vibrators of various designs. Reports as to duration of use of these measures, cases treated and results are incomplete but 16 respondents report more than 100 treatments per month.

The indications on which gymnastics, manual and mechanical massage are prescribed are paralysis, sprains, fractures, neuritis, arthritis, myalgia, constipation, contracture, hysteria and malnutrition.

PERSONNEL AND ORGANIZATION.

On the whole physical therapy departments are best organized in Veterans Administration Hospitals; equipment, record forms and technique being standardized. The medical director of the Veterans Administration, Washington, D. C., furnished the following information:

In Veterans' Administration Hospitals where a reconstruction officer is not assigned by central office, the medical officer in charge, unless he performs such duties himself, will designate some medical officer especially qualified in physiotherapy to have supervision of that activity whenever such officer is available. The ranking physiotherapy aide will have charge of the administration of physiotherapy under the direction of that officer. Where a reconstruction officer is not assigned by central office, some officer especially qualified in physiotherapy will, when available, be designated by the medical officer in charge to supervise that activity, unless the medical officer in charge performs such duties himself.

Standards for physiotherapy: Central office is responsible for outlining the standards of physiotherapy in all hospitals caring for the beneficiaries of the Veterans' Administration. From time to time personnel familiar with physiotherapy will be detailed by central office to visit the stations for the purpose of observing the work being done and making recommendations to the medical officers in charge and to the physiotherapy personnel relative to approved methods of applying these forms of treatment with a view to increasing their efficiency.

Dr. Hutchings, Superintendent, Utica New York State Hospital makes the following comment:

In our opinion the success or failure of any physical therapy department is not only in the results obtained by actual treatments but by the attitude of the personnel and the atmosphere in the department which they create by their daily contact with patients, employees and physicians. A hearty co-operation must be had with other departments in order that the physical therapy department may function properly. Furthermore, a department should have one head and he in turn have his consultants, namely the physician immediately in charge of the department and the superintendent of the hospital. These conclusions have been arrived at by practical experience in the department.

As regards organization of the physical therapy departments, 53 of the reporting hospitals state that the work is in charge of the medical officers who prescribe the treatments. In 11 institutions a physician is designated as physiotherapy chief, in three the clinical

director is in charge of physiotherapy. The Manhattan State Hospital is fortunate in having a nationally known physical therapy specialist as active consultant. In one institution the department apparently is in charge of a non-medical physiotherapist and in two the direction is apparently done jointly by medical and non-medical personnel.

One full time technician is reported by 16 hospitals, 15 have two full time and from one to eight part time technicians. The part time personnel is usually made up of student nurses who in this way get practical training in physical therapy technique.

Special courses up to two years in duration have been taken by the physicians and technicians, most of the latter being graduate nurses. Nineteen (19) institutions report that their physical therapy personnel took such special courses both in America and abroad. Six hospitals report that their technicians are licensed or registered and two are members of physical therapy associations. In six hospitals special training in physical therapy is given to student nurses. In Massachusetts Dr. Rebekah Wright supervises and instructs hydrotherapy technicians in various hospitals.

In charge.		Full time technicians.		Part time technicians.	
M. D. physiotherapy chief.	11	None	7	One	1
Staff physicians	53	One	16	Two	3
Clinical director	3	Two	15	Three	1
Consultant	1	Three	9	Four	2
Superintendent	1	Four	4	Eight	1
Non-medical	1	Five	2		
Dual	2	Six	6		
		Seven to nine	3		

SUMMARY.

I. Ninety-five per cent (95%) of reporting psychiatric hospitals have used hydrotherapy for many years on classical indications and with satisfactory results.

II. Heliotherapy (including thermo—photo—and actinotherapy) has, during the last decade, come into extensive use to improve metabolism and promote resolution of many physical ailments.

III. Static currents are used in only 6 per cent of hospitals.

IV. Low voltage currents have come into use mostly during the last four years in 28 per cent of hospitals, being prescribed mostly for constipation and paralysis.

V. High frequency currents are used in 40 per cent of hospitals for fever induction and treatment of inflammatory conditions.

VI. Other methods of pyretotherapy are malaria, typhoid and non-specific protein injections, electric blankets and short wave radio transmitter.

VII. Roentgentherapy is used in 16 per cent of hospitals mostly for malignancy and dermatologic disorders.

VIII. The average hospital has two full time technicians usually specially trained, the work being directed by members of the medical staff.

WET PACKS AND PROLONGED BATHS.

A CLINICAL STUDY OF REACTIONS TO THESE FORMS OF THERAPY.*

BY JOSEF A. KINDWALL AND GEORGE W. HENRY,
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The value of the wet pack and the prolonged bath in the treatment of psychotic patients has long been recognized but thus far no precise indications for the employment of these forms of therapy have been determined. It is well known that the effects of the wet pack or the prolonged bath are not always beneficial. In addition to clarifying these problems it is desirable to ascertain if possible the relative effectiveness of packs and baths.

On this account an analysis has been made of the physical and psychological reactions of more than 60 psychotic patients to these therapeutic procedures. The reactions have been correlated with the type of personality, the form and stage of the psychosis and the general setting in which treatment was given.

In order to gain perspective and possibly some suggestions from the experiences of the past the historical aspects of these forms of therapy were investigated. It was found that although hydrotherapy was used extensively by the ancient Greek physicians the present popularity of packs and baths is due in part to an attempt to avoid mechanical restraint. In general their virtues have been presented to each succeeding generation of physicians in a traditional manner.

CLINICAL OBSERVATIONS

Subjective Reactions of Patient.—So much has been learned in recent years from a careful study of the patient's productions that it seemed desirable to employ this method in order to obtain a better understanding of treatment by means of packs and baths. Accordingly a number of patients suffering with different types of disorders were interviewed. In most instances their reactions were obtained after they had become communicative and had gained some

* Read at the eighty-ninth annual meeting of The American Psychiatric Association, Boston, Mass., May 29-June 2, 1933.

insight into the procedures followed. Nevertheless they were still psychotic and their interpretations of the treatments were obviously determined in large part by the abnormal mental condition present. Many of them were distinctly paranoid and objected to any form of treatment. The unfavorable comments of these patients are in marked contrast to the grateful appreciation and pleasant recollections of other patients who were fully restored to health. Some of the patients were still acutely ill when the interview took place and in the few instances in which the patient was unable to give an account of his experiences the reports of nurses and physicians were substituted. Some of the more illustrative cases will be presented briefly.

CASE 1.—Banker. Aged 51. Manic-depressive excitement. Had a depression three years ago. Believed that pack was a form of punishment. During the first half hour he yelled and spat and there was much profanity. He swore that he would have revenge but he always became more agreeable, quiet and even drowsy before the end of each treatment. Prolonged baths were less effective than packs unless he was treated in a separate room. The presence and talk of another patient seemed to keep him excited.

CASE 5.—Dentist. Aged 56. Chronic psychoneurotic with manic-depressive attacks of the mixed type. He was constantly antagonistic, forever complaining and seeking sympathy. The usual content of his talk was as follows: "I'm speaking automatically—I feel silly, idiotic—laughing, dull, dormant, lethargical, confusion, rambling, raving—nothing means anything—I'm all shrunken sexually. There's a terrible sensation going through my brain all the time—pathological contraction—I used to have it like a lot of bugs struggling. No thoughts come to my mind—I laugh and giggle—my mind is like a blank."

He was given packs for a few weeks at a time over a period of one year. With occasional interruptions lasting a week or two prolonged baths were administered daily for more than two years. In his characteristic mode of expression he made the following comments on the packs: "They irritated me so that I had to masturbate—masturbation ruins your brain. I've had packs twice a day—seven months ago—they torture me—I feel like smashing everything to pieces—they horrify me—they make me feel a million times worse. I get exhausted from struggling—I come out of them like a wet rag."

He was somewhat more tolerant of the prolonged baths but his comments were scarcely less depreciatory. "They are no good at all—terrible. They seem to irritate me—they kept me in for eight hours—I used to bang my head on the tub. In 1918 I got more relief from the packs and baths, at least they didn't do me any harm."

At times he seemed to realize that packs were necessary or desirable: "They torture me but I'm getting ready for them again." Once in a while the nurses would say that he needed a pack as though it was a form of

punishment but he did not believe that this was their motive. He acknowledged that the baths were beneficial especially if given in the evening and for no longer than a half hour. At no time was he fearful of either the packs or the baths.

CASE 6.—Lawyer, Aged 57. Psychosis with cerebral syphilis. He was admitted after he had cut his throat with a razor. He was described as being worried, restless, agitated and confused. He wept, became increasingly fearful and suspected that preparations were being made for his trial. At the time the packs were administered he believed that they were a legalized form of punishment. A nurse had explained to him that they were beneficial but he could not believe this to be true since he had gained the impression from the night nurse that they were a means of punishment. He could understand that packs were necessary but he always felt that they were essentially a coercive measure.

CASE 8.—Trucking business. Aged 50. Paranoid condition. Periods of elation or depression with vague hypochondriacal delusions. At times he was threatening and occasionally he attacked others. He accused the nurses of making homosexual advances. He believed that the doctors were going to hang him and that everyone, including his family, was cooperating in this scheme. He believed that he had syphilis, that he was guilty of having infected his wife. On one occasion he attempted suicide.

His attitude toward packs and baths was in keeping with his delusional trend and his remarks indicate the degree to which these forms of treatment may have been beneficial. In regard to the packs he said: "What the hell do I want them for—they dragged me down there and put me in—I can't lick a dozen men. Packs might be all right for people that need them. My family thought I needed them—they thought everything I got here was for my benefit—it's a God damn shame what they can do to a man here—this place isn't to blame."

He was hardly less tolerant of the baths: "I never wanted any—felt I never needed any—to hell with them—one fellow was giving me one and I said 'I'll put my head under if you don't let me out.' I didn't need any prolonged bath—I had plenty of them. They tortured me in all sorts of ways—not simply with packs and baths. I know it's a frameup. Packs and baths were hell."

CASE 9.—No occupation. Aged 24. Paranoid dementia præcox. Heard voices and believed that the Jews and Catholics were against him, that he had no father and was like Christ and that women came into his room at night to persuade him to have sexual intercourse. At the time he was interviewed he was rather indifferent but he did ask whether he would ever come in contact with the outside world again. He said he liked the baths and would stay in them as long as the physician wished. He spoke of the pack as being "splendid" and said he liked to be wrapped up.

CASE 12.—Clerk. Aged 29. Catatonic dementia præcox. Mute, passive, cataleptic and tube fed. A few months later he believed he had a terrible

disease and that he was too weak to work. He became restless, agitated and paced back and forth in his room. He did not like the baths because he seemed to get restless in the water. "I was down for them and just had to take them—when I didn't like them I was told that they were good for me."

CASE 13.—Physician. Aged 31. Catatonic dementia præcox. Excited, struggling, and calling for his wife. Tried to choke himself with a tie and to stab himself with a pencil. He talked of being drugged and was fearful of being held upside down in ice. When interviewed a few months later he said he had a very hazy memory of both the packs and the baths. "I think I had a pack—because I didn't eat well—it was probably for my own good—either they were the doctor's orders—in that case they would probably be meant for my good—if they weren't then they weren't meant for my good—I think I had funny notions when I came here."

The impression made upon him by the baths is well described in his own words: "One bath I felt very warm—aren't the baths to soothe and make one feel better when he is upset or nervous? I heard one of the boys say the bath was to reduce a man when he was too fat. I only recall one of them. I think I felt better after I was out of it. I'm not quite clear in my mind—I probably wasn't clear in my mind then."

CASE 16.—No occupation. Aged 19. Hebephrenic dementia præcox. Shortly before admission had severe outbursts of temper, was very destructive of furniture and shot a number of bullets around the house. Suspicious, evasive, sarcastic, negativistic, sullen, defiant and occasionally making assaults. He had auditory hallucinations and complained that the physicians were gazing at him too intently.

This patient objected to being forced to do anything. The following are some of his remarks chiefly regarding the baths: "They seemed to calm me—I enjoyed them—enjoyed the hot water—I felt like swimming—sometimes I'd ask for one and get one. I don't think baths are good if the patient doesn't want to go in—I don't think any forcing should be done—it disturbs and scares them. I thought they were experimenting on me—to help other patients. They threatened me with a pack and that scared me—I didn't want to be wrapped up like a mummy so I couldn't be free—I wanted to be free—I wanted my freedom—I resent being told to do things. On the whole the baths are a good form of treatment—the baths made me feel weak afterward but I never kicked about it."

After considering the matter overnight he sent in the following: "Addenda—To hell with packs—restraint is exactly the opposite measure to be taken—I am the Son of God—otherwise I could never have stood this lousy racket—."

CASE 17.—No occupation. Aged 22. Catatonic dementia præcox. Confused and retarded but at times impulsive and violently aggressive. Feared something was going to happen to him and voices told him he had killed his mother. He cried convulsively. After he had jumped through a glass door in an attempt to escape he was kept under constant observation. He accepted

the feeding by tube placidly and asked if he was a man or a woman. Voices accused him of being a pervert and he once asked the physician to castrate him. Later he explained this by saying that he could not reproduce and that he needed punishment.

Several months later while convalescent but in a languid, passive state he gave the following account of his experiences. In the first place he thought the hospital was a kind of testing station where they performed "gland tricks." He was held for the purpose of contributing bone, marrow and testicles to others. A "skin grafter" periodically disappeared into a room and would say, "There goes another piece of hide." The packs were given regularly in order to carry out the subtle effect of extracting bone and marrow. When these substances were withdrawn they were transferred to those around him and he watched them "getting well on him." This angered him and caused him to strike others.

He does not recall the first pack but he remembers that the initial clammy chilliness soon disappeared. He believed that heat radiating from the bottle at his feet was drawn upward through his body by the ice bag on his head. Sometimes the temperature was intense and higher than was intended in the process of withdrawing strength for the benefit of others. While in the pack he refused to eat meat because the heat would quickly cause it to hatch out maggots in his stomach.

The process of putting him into a pack excited him and made him threaten the nurses. He would fully intend to attack a certain nurse as soon as he was released but as he became more comfortable toward the latter part of the treatment he seemed to lose interest in this form of aggression.

While in the pack he was afraid that he might fall a victim to its sedative action. He would kick away the warm bottle and shake off the ice cap. He felt that he might be rescued by someone provided that he kept awake. At times he felt the pack was going to bring about his death and that he must fight off the drowsiness in order to prevent this. He could hear a person upstairs repeating the litany for his premature burial and preparations being made for an autopsy.

The prolonged baths were the most dreaded of all these experiences. He believed that he was to be drowned in them so that others might have his penis. His testicles were to be implanted in an older man.

Interviews with an equivalent group of female patients elicited essentially the same responses, but we had the good fortune to be able to make inquiries regarding the experiences of ten women who had recovered and who had been out of the hospital from three to eight years. One of these patients had been regarded as a catatonic with a poor prognosis. Their recollections of the treatments with both the packs and the baths were surprisingly different from what was anticipated in that they all regarded these treatments as having been most beneficial. Most of them had been acutely ill and some

had protested that the nurses had given the packs for the sake of punishment. Nevertheless they enjoyed the packs and recalled them as a means of obtaining a good rest, especially when the packs were applied snugly. To what extent these recollections are a part of the enthusiasm over a favorable outcome or an indication of amnesia for unpleasant experiences is difficult to estimate.

Behavioristic Observations.—If we were to depend entirely upon the subjective reactions of the patient in arriving at conclusions regarding the value of packs and baths we should almost certainly be misled. This becomes particularly clear when we compare the immediate verbal response to these treatments with objective observations. Since excited female patients present the most severe test of the effectiveness of packs and baths a greater number of these are included in the following clinical observations:

Mrs. B., who had a post-partum psychosis diagnosed as toxic, protested against the packs: "I don't want any purification packs. Please don't give me these packs—they crush my soul!" While in the baths she said: "The nurses will murder me! Murders are committed here! That's why I don't like this tub—They are torturing me:"

When questioned later regarding her objections to the packs and baths she remarked: "I don't like either the packs or the baths—the packs are worse. They make me feel angry within and when I am angry, good people are hurt everywhere in the world. I don't know why I say it but I think Pope Gregory also suffers.—The packs hurt my pride—they crush my Jewish pride—I get very angry. You enjoy torturing my physical soul—let me go away from here, then everything will be all right." In spite of these violent protests the observed reactions to both packs and baths were almost uniformly good.

Mrs. H., a schizoid manic who usually reacted well to packs although she sometimes had to be re-packed after a three hour treatment, said: "I don't call this a pack—it's an attack! How dare you pack a mother! You are up for murder! I can do anything—kick or bite—and no nurse dare strike back. You have to be insane before you can strike anyone and get away with it."

Miss B., an involution melancholic, reacted fairly well to packs and even better to baths. Nevertheless about the latter she would say: "I will not be put in this bath! I won't stand it! This place is too good for me! I don't have to keep quiet—if you are going to punish me, hurry up and get it over with. I'm a bad, wicked woman but I'm sure you nurses are doing your best to help me. Let me out—this is terrible torture."

Mrs. S., a manic patient, said: "I don't want these damned sheets on. I've been disciplined long enough." Although she declared that the treatments were designed to crucify her she reacted fairly well to both the packs and the baths.

Miss F., while in a catatonic excitement and under great emotional tension, uttered exclamations without making any reference to the treatments. She would say: "I love you—I don't want to see my father—yes I do—no I don't. I want to eat. Why do I do these things? I see those eyes—no I don't—yes I do. You God damned fool—come here—kiss me:"

Mrs. Y., an involution melancholic, while being placed in a pack said: "Don't torture me this way—I don't want those wet sheets—they don't help me any—don't torture me with those hot sheets." Although she was usually noisy at other times she was quiet while actually in the pack.

Mr. W. has been in a chronic manic state for about three years. He is exceedingly talkative, often threatening and sometimes destructive and violent. This aggressive behavior seemed to be accentuated by the packs. While in the baths he splashed water about and disturbed other patients by his excited behavior and vile language. Occasionally he would become less active while still in the prolonged bath but the constant flow of talk was not interrupted. He was not distracted from his usual megalomaniac trend which is epitomized in the following: "I'm God Almighty myself—I'm the mad major on all fronts—I can kill you with my breath!"

Mr. B., a depressed, agitated and sleepless patient, is an example of the other extreme in the reactions to prolonged baths. His comment was as follows: "When the bath is finished and should I be asleep, will you please not disturb me for lunch?—I want to sleep."

Recollections of the packs and baths after a short interval of time may be equally vivid and often indicate a decided attitude. A few illustrations will make clear the viewpoint in such cases:

Mrs. C., a circular manic, usually reacted well to the packs but harbored ideas of torture, death and the end of the world. When interviewed after she had become somewhat clearer she said: "I thought they were trying to kill me—I still do. It's a terrible thing to tie you up so tight. A nurse said they would throw me into a hole and bury me—or take out my tongue. My father and my sons are masons—I really think that's why they do these things to me—but I know if I say anything I'll be punished."

Miss B., a schizoid manic, reacted extremely well to the baths. While in them she would talk in a childish voice about her "daddy" and would refer to him as her sweetheart. When interviewed later and while in a convalescent state she commented as follows: "It was rather hazy—I had a feeling of being rushed around and roughly handled. I also thought I was sent here to prove something—the packs seemed like rites. It also seemed as if people of different religions had hold of me and were trying to prove that the awful religious rites of savage countries were not necessary."

Miss C., while in a catatonic excitement sometimes continued to struggle in her attempts to get out of the pack. Occasionally she was so noisy after being removed that she was placed in a bath away from other patients. Nevertheless at other times the effect of the pack seemed to be decidedly beneficial. This was true in spite of her verbal protests against them. One

morning after a period of shouting and aggressive resistance she said while being placed in a pack: "All right, put me in a pack—I don't care—that will help everyone." She not only reacted well while in this pack but she was walking about and talking quietly an hour later. A few days afterwards just after having been put in a pack she shouted: "Come here and get me out! Come here, you Swedish bitch—I want to get out of here right away, do you understand?" She soon became quiet however and remained so for more than an hour after being removed from the pack.

After there had been considerable improvement in the patient's condition she was questioned regarding her impressions of the packs. Although she was still on the defensive her comments were: "Oh, I knew they were treatments—I wasn't that confused, but I got constipated in the packs. As a child I had been trained to be clean and use the pottie and I think patients ought to be trained the same way. I didn't like to soil myself."

Such examples of individual reactions to packs and baths could be multiplied indefinitely but it would be difficult to avoid the fallaciousness of impressions if our study were terminated at this point. It is evident to anyone familiar with these forms of treatment that certain important aspects have not yet been presented. There are physiological responses to the pack and the bath which must be estimated in some other way.

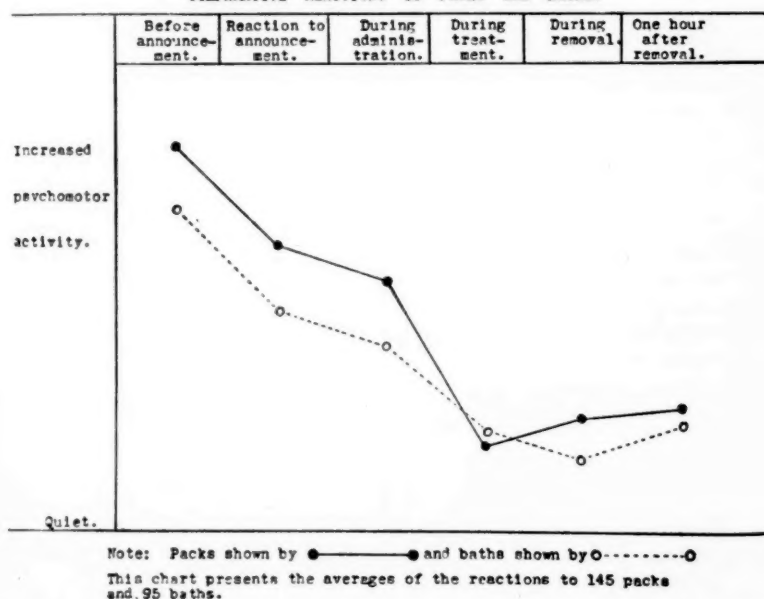
For this purpose the accompanying itemized form was devised so that the nurse could report in detail the reactions of the patient to each treatment. The items were arranged to indicate activity varying from sleep to aggressive violence and the nurse merely had to make check marks in recording the behavior. The record includes the patient's behavior before the pack or bath is announced, the reaction to the announcement, the behavior at the beginning of the treatment, during its course, at the end of the treatment and finally after one hour has elapsed. By assigning numerical values to the different types of behavior the results of the treatments can be shown in graphic form. Each of the types of behavior under "Restless" is counted as one and each of those under "Overactive" is given the value of two. Increase in activity necessitated checking a greater number of items and the resulting curve is correspondingly high. The higher the curve, the greater the excitement and a sharp drop in the curve toward the right indicates that the patient becomes more quiet as a result of the treatment.

More than 50 patients were studied in this manner and a total of 222 packs and 209 baths were employed as a basis for this report.

An accurate comparison of the effects of packs and baths is not possible because a strict alternation of these forms of treatment for the same patient and with the mental condition unchanged was seldom feasible. As a matter of fact packs are often administered when the patient is too disturbed to be treated with a bath.

In addition a considerable proportion of these treatments cannot be used for comparison because the patient was already "quiet" before individual treatments were given. When this group is eliminated, there remain 145 packs and 95 baths, most of which were

COMPARATIVE REACTIONS TO PACKS AND BATHS.



administered to women. The total averages of the observed responses to these treatments are presented in the accompanying chart.

When the effects of the packs and baths are observed in this manner there can be little doubt of their soothing properties. It appears that they are equally effective, taking into consideration the different conditions under which they are employed.

Not all of the immediate results of these treatments can be ascribed to physiological changes because the mere announcement as well as the preparations for treatment often seems to have a sedative

FORM FOR RECORDING PACKS AND BATHS

Name.....	Before announcement.	Reaction to announcement.	During administration.	During removal.	One hour after removal.
Hall..... Date.....					
Pack..... Bath.....					
Time..... M to..... M					
Room temperature.....					
Water temperature.....					
Patient's temperature.....					
Pulse rate.....					
QUIET					
In bed.....					
Sitting.....					
Standing.....					
Walking.....					
Talking.....					
Occupied.....					
Weeping.....					
Refusing medication.....					
RESTLESS					
Pacing floor.....					
Running.....					
Scribbling.....					
Tearing paper.....					
Laughter, excessive.....					
Laughter, meaningless.....					
Whining.....					
OVERACTIVE					
Moving furniture.....					
Throwing furniture.....					
Tearing clothes.....					
Tearing bed clothes.....					
Singing loudly.....					
Shouting.....					
Abusive to personnel.....					
Abusive to patients.....					
Passively resistive.....					
Actively resistive.....					
Resistively assaultive.....					
Spontaneously assaultive.....					
Incontinent—urine.....					
Incontinent—feces.....					
Smearing.....					
Patient's Remarks.....					
Additional Notes.....					

action. Distraction from morbid interests, apprehension, the realization of obligatory conformity and other psychological factors no doubt contribute to the total reaction.

Another aspect is observed in the reactions to 77 packs and 114 baths given when the patient was already quiet. This group is composed of patients who were treated routinely in order to avoid the association of treatment with "bad behavior" and of some who happened to be quiet before individual treatments were begun. It was found that about 25 per cent of these patients were temporarily disturbed by the interruption of their usual activities and by the manipulations associated with the beginning and termination of the treatments. Different patients were described as singing, weeping, or whining, or as being restless and pacing back and forth. Some of them began shouting and using abusive language and they were not uncommonly actively or passively resistive.

Only 27 patients had a sufficient number of treatments accurately recorded to demonstrate individual reactions. One patient had as many as 18 packs and another had 32 baths. The action of the baths on this patient seems to have been almost uniformly sedative.

Of 20 patients who had a series of treatments with packs, five were effectively quieted, 12 had a fairly good reaction, and in only three cases were the results poor.

In the first group are represented one of each of the following types of psychoses: catatonic, manic, involution melancholic, paranoid dementia præcox, and schizoid manic. The ages varied from 20 to 48 and the duration of the illness from one to six years. The patients in this group responded favorably to the pack.

In the second group in which the response was fairly satisfactory, there were three catatonics, seven manics, one involution melancholic, and one alcoholic. Their ages varied from 15 to 57 and the duration of illness from one to 15 years.

The group showing poor responses consisted of two catatonics and one involution melancholic and their ages were 18, 25 and 60. The youngest seemed to be made worse by packs given when she was already quiet.

As far as could be determined there was no relation between the physical condition of the patient and the effectiveness of the pack. The same is true of the attempt to relate the pre-psychotic personality with the results obtained.

It would seem therefore that regardless of the type of disorder the physiological response in most of the cases studied was desirable and probably beneficial. This is true in spite of the frequently contrary views of the patient regarding the nature and purpose of the treatment. In the cases cited it has been shown that the patient may believe he is being tortured or killed and yet react very well although occasionally a patient with the same ideas may react badly. Moreover the same patient may react differently on different occasions.

Nursing Problems.—The complaint of one of the patients that she "got constipated in the packs" requires some comment. On rare occasions a patient may be uncomfortable because of a desire to defecate but it is a routine procedure to take the patient to the toilet before the pack is applied and he is taken out of the pack when any such desire is indicated. At times this has led to complications in that some patients make use of this request in order to be removed from the pack.

There are many other difficulties with which the nurse is confronted in the application of these forms of therapy but we wish to emphasize certain responsibilities which cannot be neglected and to call attention to some unusual problems.

When the patient understands the purpose of treatment and is cooperative special nursing problems seldom arise. With the administration of the pack frequent observations must be made to determine whether the desired physiological response has been obtained. During warm weather it is especially important to be certain that the patient is not over-heated. With the prolonged bath the usual precautions may be sufficient although it is necessary to be forever alert for suicidal tendencies.

Regardless of the patient's mental condition it is essential that the nurse tell the patient when a pack or bath is about to be given and explain its nature and purpose. Such an explanation may have to be repeated many times and since nurses vary greatly in the ability to deal with the mentally ill it is often desirable to have several nurses at various times try to gain the confidence of the patient as well as his cooperation in the treatments.

One of the most frequent errors and probably the one most difficult to avoid is the aggressive, punitive attitude in giving a pack. Those who are in daily contact with disturbed patients cannot always be expected to suppress or sublimate fully their retaliative impulses

and they need the interest and encouragement of supervisors and physicians in dealing with trying situations. Otherwise they are in the unbearable position of being attacked by patients and subject to criticism and disciplinary measures when the nursing is not carried out in an exemplary manner.

Aside from these general considerations in the treatment of disturbed patients there are problems which test the ability of the physician. It is so easy for him in directing the treatment of large numbers of patients to fall a victim to routine procedures that he must be unusually curious and alert to be aware of problems which require study, courage and exercise of good judgment in their solution. If he does not possess these qualities the efforts of the nurses tend to be futile and the prolonged use of the packs or baths may be actually harmful.

A brief account of the experiences with a few of the more difficult patients may serve to illustrate some undesirable reactions.

CASE 29.—Mathematician. Aged 29. Catatonic dementia præcox. Sad, hopeless, self-accusatory, talked of suicide and asked for a speedy death. Doubted the identity of his own father. Responded to voices, believed he had syphilis and that he contaminated others. Thought he may have been kidnapped and that his family had been killed. Became mute and had to be tube fed.

As a part of his general treatment and especially while he was being fed by tube it seemed desirable to resort to the use of packs. He had made impulsive attempts to break the windows with his fists and shortly after admission he tried to break through a glass door. In addition he was constantly picking at his skin and rubbing his ears. The combination of this friction and the struggle in trying to feed him produced hematoma of both ears.

It was soon observed that the frequent struggles with the nurses associated with the application of the pack stimulated his aggressive tendencies. The additional confinement made him more eager to get away. He would try to rush by the nurse in order to dive through a window or a door. As a result there was a struggle with several nurses almost as soon as he was given the freedom of his room. He believed that everyone was against him and called the nurses murderers and thieves.

As this behavior was repeated day after day it seemed that restraint was unavoidable. About a week after this decision was reached his father came to visit him and the experiment of having them meet in a large sitting room was tried. The patient had to be carried to this room but it was noticed that he made no attempt to escape or to attack any of the nurses for half an hour. He then made a sudden dive for one of them but stopped short and did not attack. A little later he tried to rush by one of the nurses, was stopped and then released. The supervisor tried to talk with him and offered him fruit

and candy. The patient then walked back to his own room and for several weeks his door was open and he only occasionally made an attempt to escape.

CASE 30.—No occupation. Aged 20. Hebephrenic dementia *præcox*. Had been sick at least a year before admission and was then preoccupied, moved his lips without speaking, spat impulsively and probably was hallucinating. Within a few weeks he became more aggressive, tried to strangle himself and plunged through a door.

This change in his condition resulted in more conservative nursing care by restriction of freedom and the frequent application of packs. Prolonged baths were of no avail as he would promptly step out of the bath and attack the nurse. Attempts to get him outdoors and to the gymnasium always led to a struggle. When he was brought to the gymnasium he would not participate in any of the games or exercises.

When questioned regarding the packs he said: "I don't know why they do that—I think it's a bad policy—it's all right for unruly people." He believed that the packs did not do any harm but they might and he was sure that they were a cruel form of treatment.

Six months passed without any improvement and his aggressive tendencies became more marked. With the exception of physicians he would strike anyone who came near him. Apparently as a part of his protest against restriction of his activities he developed the habit of smashing his tray and its contents. As soon as he was served he would throw both the tray and his food against the wall. In addition he wet, soiled and smeared himself.

The chances of altering this course of events seemed rather poor until one day an appeal was made to him for the use of his room. He was told that it was needed in order to properly care for another man, who was very sick. He was then given the freedom of a sun porch and allowed to do as he pleased. There has since been a marked improvement in his behavior and for several weeks he has been eating in the dining room, cleanly in his habits, going to the gymnasium, pitching ball outdoors and taking part in competitive games.

CASE 31.—Corporation executive. Aged 25. Catatonic dementia *præcox*. For two years he had been fearful that he had venereal disease and he finally became panic-stricken, hallucinated, thought he must die and attempted suicide. On admission he was threatening, resistive and violent. Voices called him vile names and he said that there were many things about which he did not care to talk.

Within the first few months his condition grew progressively worse. He felt that people were pulling at his clothes and trying to take them away; he believed that one of the nurses was influencing him; he became more excited and aggressive; he broke mirrors, tried to mutilate himself and took every opportunity to crash his head against the wall or the floor. In the bath he promptly put his head under the water and even when a modified pack was used in the bath he injured himself by constantly striking his buttocks against the canvas hammock. He had to be tube fed.

For more than a year he was kept in a camisole and treated with packs without any progress being made. He seemed to enjoy the restraint and the struggles with the nurses or anything which furnished discomfort. He repeatedly asked to be put into a camisole and sometimes he would be noisy and disturbed all night when his request was not granted.

It became increasingly evident that such measures were futile and merely accentuated the patient's morbid desires. Perhaps a little later some experiments were undertaken for the purpose of changing his attitude and conduct.

While he was lying in bed, restrained by a camisole, a magazine was placed on his chest where he could read it. Shortly afterward it was noticed that his interest caused him to turn the pages with his tongue or his nose. He was given old tennis balls to bounce in his room as a substitute for tearing out screens. It was discovered that he would not strike women and a female nurse was placed in charge of his feeding.

The first indication of improvement was observed when he was released from the camisole and merely tucked in bed with a sheet. This gave him the feeling of being restrained but his hands and feet were free and he could slide under the sheet if he wished. He soon began to accept food from the female nurse and the stimulus of her presence together with the experience of tasting food again made the feeding unnecessary. Old magazines now and then left in his room without comment occupied his attention more and more with the result that he began to read books which were left at his disposal. He may have been helped also by the enthusiasm of a hypomanic patient who stimulated talking as well as a friendly tossing of the tennis balls. Nurses were frequently changed because it was noticed that his behavior was better with strangers.

Illustrations of these difficult problems could be multiplied but a consideration of the more usual methods of dealing with them leads to the conclusion that under the guise of conservatism and with the appearance of necessity the prolonged use of such methods may be actually harmful. Undoubtedly there are some patients who can be subdued by mechanical coercive measures but there are others whose aggressiveness is stimulated. A vicious circle is gradually established in which increased restraint is met by rebellion. The patient inevitably has the advantage because he is not bound by any rules or standards of conduct. If in addition there is a strong homosexual conflict projected desires result in the extremes of masochism and sadism. Self-destruction and the annihilation of others becomes an absorbing passion.

With such cases coercive measures are not only futile but may be detrimental. They tend to demoralize the nursing service and they accentuate the worst features in the psychotic trends of these patients. They cannot be justified on the grounds of expense because

the patients cited had a minimum of two nurses and sometimes three or four every time they went outdoors and they were never without a nurse night or day. The contrast between smashing a tray of food against the wall and eating peacefully in the dining room requires no comment. The orderly participation in group activities rather than struggles with nurses is obviously to be desired. To bring about such changes is a severe test of the patience, courage, ingenuity and good judgment of both physicians and nurses.*

DISCUSSION.

It is inevitable that in the administration of packs and baths errors will be made which contribute to unfavorable reactions but even under ideal conditions there may be a great discrepancy between the patient's subjective reactions and the obvious quieting effects of the treatments. Some patients are so occupied with their own trends that it is almost impossible to learn what a pack or bath may mean to them. This may be illustrated by the remarks of an excited patient who, apparently in a rage, shouted: "Yes, God damn him! You wouldn't have Karo syrup, would you? They built the Empire State—I don't give a damn! The State sunk a battleship!"

In such cases the content of the talk bears no relation to the actual situation and we must depend upon the change in volume, the accompanying emotional tone and the general attitude of the patient. Annoyance and protest may be thus indirectly expressed in his habitual trend.

Nor are retrospective accounts entirely reliable. This is especially true with patients who have been excited and confused. A great deal seems to be forgotten or at least some of the unpleasant features are not easily recalled. A psychologist who had been exceedingly disturbed and violent for weeks could recall very little of this period and had no recollection of ever having been placed in a pack. Intensive psychoanalytic investigation probably would revive memories but data from this source are not at present available.

Distortion in the patient's account is in general dependent upon the kind and degree of psychotic disorder. Packs and baths like

* Grateful acknowledgment is here made for the suggestions and assistance of Mr. William C. Roden who for more than 20 years as supervisor and assistant director of nurses has been actively engaged in the solution of these problems.

other daily experiences seem to be incorporated in the general psychotic reaction. If the patient is bitter, defensive or delusional, the subjective reaction may be extreme in one direction, while if he is grateful, euphoric or even hopeful, another extreme may be expressed.

The packs and baths induce certain physiological effects because of their own peculiar properties. In both types of treatment there are warmth and moisture which of course have a definite action upon the vasomotor system. There is a dilation of the superficial vascular bed and a concomitant drainage of the central organs. The water or wet blankets establish a constant temperature with the result that cutaneous stimuli and especially thermal stimuli are greatly reduced.

When the patient is snugly confined in a pack there is also a reduction in the stimuli which arise in voluntary muscular activity. Every time a muscle contracts or a part of the body moves, there is a series of centripetal nervous impulses and the restraint of the pack therefore tends to decrease cerebral activity. This effect is often counterbalanced at the beginning of the treatment through the necessary manipulations and in the protest against confinement.

Unless a patient were troubled with a disordered sensorium and therefore likely to be disturbed by illusions and hallucinations, it would seem that packs and baths would be more effective if given in a darkened room. As a rule the results would also be better if the treatments were given in sound-proof rooms and if not more than one patient were treated in each room.

The after-care of these patients is probably just as important. This means that the release from the pack should be as devoid of external stimuli as possible. After both the pack and the bath the patient should be made comfortable in bed or at least he should not be again exposed to the many sources of stimuli on a disturbed ward. Under ideal conditions these treatments and the after-care would be given in rooms especially constructed for the purpose.

A number of patients have complained of the local painful pressure of restraining sheets used in connection with the packs. More attention should be paid to this disturbing factor so that when additional restraint is necessary or desirable, it might be more evenly distributed.

Packs and baths undoubtedly have considerable suggestive value. In this connection it may be interesting to quote Bramwell * in his discussion of hypnotism: "In certain cases of insanity, the late Dr. Auguste Voisin of Paris attempted to induce hypnosis by force. The patient, either held by assistants or placed in a strait-jacket, had his eyes kept open, and was compelled to look at the light of a magnesium lamp or at Voisin's fingers. If necessary, the process was continued for three hours; suggestions meanwhile being made. The patients, who at first usually struggled, raved, and spat in the operator's face, eventually became exhausted and, in successful cases, passed into a condition of deep sleep." Few physicians may wish to recommend this procedure and there may be serious doubts as to what part hypnosis played even in the "successful" cases but at least attention is called to the desirability of employing suggestion to enhance the physiological response. Whether there is any connection between the human response to packs and the "hypnosis" or "catalepsy" induced in certain animals by physical restraint is difficult to determine.

At the present time it is impossible to estimate the extent to which packs and baths may owe their soothing effects to an approximation of the comfortable infantile or intrauterine environment. Some objections to these treatments might even be raised on the ground that they encourage regression. These could not be seriously entertained, however, as the same objections would apply to any preparations for sleep. Furthermore an occasional temporary retreat in the face of a constant struggle with reality is probably desirable. In any case no undesirable effect of this kind has been observed in connection with this study.

In rare cases it has been observed that the tingling sensations in an extremity which has been wrapped too tightly in a pack have been regarded by the patient as evidence of electrical influence or treatment. This probably would not occur if the pack were given properly and if care were taken to prevent the patient from lying on an arm.

There can be no doubt that constant study by the physician of the reactions of patients to these treatments is desirable. His interest not only contributes to the general therapeutic value but his pres-

* Bramwell, J. M.: *Hypnotism. Its History, Theory and Practice*; Philadelphia, 1930; p. 43.

ence, his explanations or his suggestions should be very helpful. This is illustrated by the case of a young catatonic patient who kept getting in and out of the prolonged bath. On inquiring about this behavior it was learned that he believed the baths were decreasing the size of his genitals and taking away his sexual power. After the effect of the prolonged action of water upon the skin was explained to him, he began to cooperate in the treatments.

CONCLUSIONS.

After a deliberate attempt to study the various aspects of treatment by means of packs and baths and to present the undesirable as well as the desirable features we have come to the conclusion that in general both packs and baths are desirable forms of treatment. It has not been possible to determine conclusively the relative efficacy of packs and baths because there was seldom a strict alternation of these treatments over given periods. In addition the baths are sometimes not practicable when the patient is acutely ill. The physiological action of both is undoubtedly sedative and it can be stated unequivocally that most of the patients prefer baths to packs.

A great discrepancy was observed between the content of the patient's talk, particularly his protests against the packs, and their obvious soothing effect. Apparently the physiological reaction is the determining factor and this is usually effective regardless of the patient's immediate subjective experiences.

No constant relationships between the kind or degree of psychotic reaction and the effectiveness of the treatments was observed. Both packs and baths may be recommended for the reduction of psychomotor activity but they may be undesirable for patients who labor under emotional tension which might be relieved by a moderate amount of gross muscular activity.

The continued use of packs may be contraindicated in cases of acute homosexual panic and particularly in some cases of catatonic excitement. In such cases the struggles accentuate sadistic and masochistic tendencies and may actually contribute to a deterioration in habits.

Whatever the kind or the stage of the illness may be, packs or baths should not be prescribed indiscriminately or in a routine manner. Each patient must be considered individually and the reactions

to treatments must be continually studied. If this precaution is not taken both packs and baths may be positively harmful in their effects.

Frequent supervision is necessary in order to eliminate the suggestion of punishment through the improper administration of packs. An erroneous impression of the purpose of the pack may be avoided also by taking the precaution to have no obvious sequence between misbehavior and packs. This may be facilitated by giving frequent explanations to the patients and by employing the pack routinely during more excited periods.

Studies of this kind give us another glimpse into the complexity of the problems with which we must deal. We hope this investigation may lead to others which will increase our knowledge or therapeutic agents and make their application more scientific.

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DISCUSSION.

DR. REBEKAH WRIGHT (Boston, Mass.).—*Mr. Chairman, Ladies and Gentlemen:* I am pleased at having the opportunity to say a few words in appreciation of this paper by Doctors Kindwall and Henry. Their clinical study is certainly a forward step in hydrotherapy. If similar studies are conducted in other hospitals these major sedative treatments will soon be better understood.

For many years we have emphasized the importance of careful technique, of accurate records and of precise prescribing; also the fact that wet sheet packs and continuous baths are not restraint or substitutes for seclusion but depend for their good results upon the physiological reaction to the treatment. While we have a neutral temperature in our medium in both the continuous bath and pack, we obtain it in two different ways. The bath is at a neutral temperature from the beginning. The neutral stage of the pack follows reaction to the application of cold.

Our most effectual packs, that is in my own experience, have been those given to robust, very active patients who required a very cold pack to abstract heat already accumulated in the skin, perhaps immediately followed by another pack to bring about the reaction which stimulates the circulation of the blood

throughout the entire body and brings it to the skin—establishing a neutral temperature of the skin, the sheets and the air within the blanket in which the patient experiences sedation. For patients in the manic state we secure quiet and sleep more quickly in cold wet sheet packs than in prolonged neutral baths, but the packs have to be repeated.

For many years we have tried to obviate the use of the term "restraint sheet." Finding it necessary to protect the patient from falling off the bed, we have adopted the term "protection sheet" for the one sheet that is usually all that is needed. We suggest the careful application of two additional sheets if the patient is one who really requires restraint (suicidal or homicidal) and where the physician considers it absolutely necessary to prescribe it.

In regard to prolonged baths, some good results are obtained in tubs where no hammocks or covers are used, but where the patients, clothed in bathing suits, have complete freedom. This method must be followed with judgment on the part of the prescribing physician and close attention by the nurses who administer the treatment. More patients are comfortable relaxed and reclining on fitted hammocks and with well fitted covers on the tubs.

In one of our state hospitals in Massachusetts we recently began to prescribe for a class of sleepless patients, baths of from a half-hour to two hours' duration in the early evening. This met the need of a class that could not be very well cared for during the time that the more noisy patients were in the prolonged bath tubs in that hospital.

The application of cephalic cold is important. It goes hand in hand with the application of the pack and the prolonged bath. Finally, the success of sedative packs and baths depends largely upon the tact, kindness, common sense and special training of the nurses who administer the treatments.

SYPHILIS IN SHAKESPEARE'S TRAGEDY OF TIMON OF ATHENS.*

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The only information in contemporary Greek literature concerning Timon, the misanthrope of Athens, is gained from vague references to a man of that name who was ridiculed by Plato and Aristophanes as an oddity, and who amused the people by sarcastic comments upon the unlikableness of men in general. Later writers have added many fictitious details to that scant description.

Plutarch's¹ story of Timon makes it appear that he had been wealthy and that his bitterness sprang from the perfidy of his friends.

Lucian,² later in the second century after Christ, in his "Timon, or the Misanthrope," adds that Timon had possessed property and had wasted his wealth in over-generous hospitality; that his false friends had defrauded him and imposed upon his goodness of heart; that he later made a precarious living by farm work, and that Jupiter finally had reinstated him in wealth as a poetic revenge for the perfidy of the former friends every one of whom had deserted him.

William Painter in "The Palace of Pleasure"³ saw the unloveliness rather than the oddity of the misanthrope. He tells "of the strange and beastly nature of Timon of Athens, enemy to Mankind, with his death, buriall, and Epitaphes." This writer adds, "Plato and Aristophanes do report his marueylos nature, because hee was a man but by shape onely, in qualities hee was

* Read at the ninetieth annual meeting of The American Psychiatric Association, New York City, May 28-June 1, 1934.

¹ Plutarch's Lives: "Antony."

² "Timon, or the Misanthrope," Greek with English translation prepared by A. M. Harmon, 1915.

³ "Edition done into English by William Painter now again edited for the fourth time by Joseph Jacobs, a line to line and page to page imitation of Joseph Haslewood's 1813 edition compared with the British Museum second edition of 1575," London, 1890, page 112.

the capitall enemie of Mankinde, which he confessed frankly utterly to abhorre and hate." Painter repeats the story of the feast with Apemantus and gives a number of the other incidents which appear in the Shakespearean play, amongst which is the story of the appearance one day of Timon at the speaker's rostrum of the Athenian assembly to announce that he was about to cut down a certain fig tree, which he proceeded to explain had in past years often been used by Athenians for hanging themselves, and that he would delay 10 days longer hoping that any Athenians who contemplated availing themselves of it would do so promptly.

By certain interesting embellishments to Lucian's Timon, Shakespeare's character was produced. Scholars are divided in opinion as to whether the great dramatist painted this altered portrait or merely touched up the plot and the hero of an earlier Elizabethan play of unknown title⁴ and authorship. The play as we have it is not of great interest except that the embellishments superimposed in it upon the Timon of Lucian arouse one's curiosity as to the writer's reason for adding them and the sources from which he derived them. There are four conspicuous new features in the drama that are deliberate additions to the story of Lucian, and they are not of the sort that poetic imagination alone would naturally hit upon as improvements upon an older plot.

(1) Shakespeare's play pictures Timon's earlier career not as that of the eccentric cynic of the early Greek poets, and not merely as the commonplace wealthy Athenian of Lucian, but Timon is here said to have been a prominent citizen, a lord wealthy indeed, (I. i, 53-72), but also a leader in civic and social life, a cultured man (I. i, 292), a famous soldier (III. v, 59; IV. iii, 92-95) and a counsellor, a military leader to whom the Senate naturally goes when the city is threatened, offering him dictatorial powers if he will save the fatherland (V. i, 141-167). His personal charm and graciousness endeared to him not only his peers but even strangers and servants (IV. ii, 23-50 and iii, 522). In brief, Shakespeare has transformed the uncouth Timon of the early poets into a man of intellectual clearness, great learning, high culture, and executive ability.

⁴ Possibly Shakespeare had access to the sixteenth century play, "Timon," discovered by Alexander Dyce and published in 1857 in the Shakespeare Society's reports.

(2) Lucian affirms that Timon lost his fortune by over-generosity to self-seeking friends. But in Shakespeare, during the second period of the play, this profligacy ceases to be generosity and becomes pathologic, due to weakening intellect. Timon is oblivious of the obvious frauds practiced upon him by the toadies and parasites who throng his house. A gossiping lord comments on his wild extravagance (I. i, 287),

"He pours it out, * * *
No meed, but he repays
Sevenfold above itself; no gift to him
But breeds the giver a return exceeding
All use of quittance."

When a debtor comes to repay his debt, Timon simpers (I. ii, 8),

"O, by no means,
Honest Ventidius; you mistake my love:
I gave it freely ever; and there's none
Can truly say he gives, if he receives.
* * * More welcome are ye to my fortunes
Than my fortunes to me."

Stern old Apemantus refuses Timon's gifts (I. ii, 38),

"O you gods, what a number of men eat Timon, and he sees 'em not!
* * * so many dip their meat in one man's blood; and all the madness is, he cheers them up too."

The speech in Act I, scene ii, 90-112, shows the maudlin sentimentality of an enfeebled mind, even though it was uttered at a banquet. His faithful steward, Flavius, realizes that Timon's mind is abnormal. Ordered to pour out more jewels to guests whom he saw robbing his master, he remonstrates (I. ii, 197-211; II. ii, 1-8, etc.) and comments (I. ii, 166-170),

"There's no crossing him in's humor. * * *
When all's spent, he'd be crossed then,
an he could."

A man once of ability in practical affairs, now in his glowing euphoria he not only fails to look at his own accounts, but refuses to recognize his bankruptcy when the accountant holds the books before his eyes (I. ii, 197; II. i, 1; II. ii, 1; II. ii, 141).

If an Athenian with a decrepit hack wishes to change it for ten steeds, he presents the hack to Timon and receives as a gift ten good horses. As his fawning guests leave his door, Timon urges horses and jewels upon them (I. ii, 176),

"I must entreat you, honor me so much
As to advance this jewel; accept it and wear it,
Kind my lord."

And (I. ii, 215),

"My lord, you gave good words the
other day of a bay courser I rode on. 'Tis yours,
Because you liked it."

Timon's grandiose expansiveness leads him to feel he "could deal kingdoms to his friends, and ne'er be weary" (I. ii, 225). Old Apemantus presses him to realize his insane vaingloriousness (I. ii, 245). His former sycophants now begin to call him a fool (III. i, 52); and their treachery, long apparent to the world (III. ii, 72-82), begins to dawn confusedly on Timon only when he is being dragged from his own house for debt (III. iv, 80-110).

For some reason Shakespeare makes of Timon not merely the reckless spender pictured by Lucian, but a man once of vigorous intellectual powers who has rapidly become weak-minded, driveling, and grandiose. In Lucian, he is merely an unknown extravagant youth; in Shakespeare, a once famous, wise, and well-poised man who becomes demented and piles his money into the hands of thieves.

(3) The subsequent course of Timon, after he has lost his fortune, is different in the Shakespearean play from that pictured by all previous writers. They represent him as a healthy crank, wandering around the city and butting into others' affairs, or working in his own fields. The Shakespearean play, however, shows Timon as a man sick, physically and mentally, and rapidly going to pieces. His servants report him (III. iv, 70) leaning

"Wondrously to discontent; his comfortable temper has forsook him; he's much out of health and keeps his chamber."

He breaks into wild anger and violence, so that they try to hold him in his room (III. iv, 80). He commits murder and the Senate prepares to condemn him to death: "He dies. * * * He forfeits

his own life that spills another." (III. v, 68-86). He is labeled a madman (III. iv, 101-103, 114; vi., 118, 121; IV. iii, 66, 88, 221, 403, 464), and Flavius cries out,

"O you gods,
Is yond despised and ruinous man my lord?
Full of decay and failing?"

The graciousness of the refined social and intellectual leader disappears, and we see Timon, wont to punish aggression by subtle sarcasm, now throwing water in the faces of his guests, then driving them out by hurling the table-ware after them. The clever repartee shown by him in the first act gives way to bald vituperation in the last three acts (III. vi, 73-115). His original whimsical misanthropy suggested the pose of a philosopher; but now appears a raving, insensate fury against all men, without discrimination between true friends, who risk much to visit him, and the horde of sycophants who betrayed him. Even in an Elizabethan setting, his grossness and obscenity characterize him as a dement. He becomes malignant (IV. i, 1-40; iii, 271-274) and talks insanelly, yet values himself highly (IV. iii, 259),

"Myself * * * who had the world as my confectionary,
The eyes, the tongues, the hearts of men
At duty, more than I could frame employment."

It is not clear whether Shakespeare's adoption of Lucian's story of Timon's digging gold out of the ground and hurling it at all who approach is intended to represent a grandiose delusion of Timon's or a legendary fact.

(4) Lucian's satire is dignified and is set in a clean social atmosphere. In contrast with this, in the Shakespearean play, after the first act coarse venereal references are introduced as though for some special purpose. Not only do they not appear in the earlier plays from which this plot is taken, but they are of no particular relevancy or appropriateness so far as the essential story is concerned. Coarse sexuality and clearly recognizable references to syphilis are dragged into a plot which did not of itself call for them (III. vi, 87; IV. i, 3, etc.; iii, 61, etc., 79, 83, etc., 112, etc., 133, etc., 271-273.)

The descriptions of venereal disease are those of syphilis, as an infectious disease, communicated by prostitutes, producing skin

ulcers, sores in the mouth, and abortion; destroying the bridge of the nose; causing impotence, loss of sexual desire, and of power of erection. It cracks the voice, wrinkles the face, produces baldness, breaks down the bones. It "strikes the sharp shins" and kills sexual desire. Timon greets the unoffending prostitute with:

"Be a whore still: they love thee not that use thee;
Give them diseases, leaving with thee their lust.
Make use of thy salt hours: season the slaves
For tubs and baths; bring down rose-cheeked youth
To the tub-fast and the diet." (IV. iii, 84.)

He becomes incoherent ⁵ in his malignant fury as he urges the young women on (IV. iii, 133, etc.), and continues (line 151),

"Consumptions sow
In hollow bones of man; strike their sharp shins,
And mar men's spurring. Crack the lawyer's voice,
That he may never more false title plead,
Not sound his quilllets shrilly: hoar the flamen,*
That scolds against the quality of flesh
And not believes himself: down with the nose,
Down with it flat; take the bridge quite away
* * * * make curl'd pate ruffians bald:
And let the unscarr'd braggarts of the war
Derive some pain from you: plague all;
That your activity may defeat and quell
The source of all erection.

SHAKESPEARE'S INTEREST IN MEDICAL SCIENCE.

The "Tragedy of Timon of Athens," as we have it, reflects a remarkable interest in disease on the part of the writer, and shows more knowledge of medical science than is usual in poets and dramatists. The description of syphilis, if not the result of clinical experience on the writer's part, must have been gained by reading some of the many current descriptions of the disease by physicians. The imprecation by Timon's servant against Lucullus shows appreciation of the combat between body cells and the virus of disease. The servant vengefully hopes the food in the ungrateful

⁵ Literary critics condemn some of these passages as non-Shakespearean because of their incoherence and degraded thought. (Cf. Note 9.)

* Rot the priest. (Even Cardinal Wolsey was accused of having syphilis. Cf. *infra*, note 12).

friend will not strengthen his tissues to overcome disease, but will add vitality so as to prolong life and, therefore, suffering. (III. i, 59, etc.)

"This slave * * * has my lord's meat in him:
Why should it thrive and turn to nutriment,
When he is turn'd to poison?
O, may diseases only work upon't!
And, when he's sick to death, let not that part of nature
Which my lord paid for be of any power
To expel sickness, but prolong his hour!"

There are many evidences that the great dramatist was closely acquainted with physicians. He expressed admiration and respect for them in various plays. John Hall, a physician of some reputation and a writer on medical subjects, lived adjacent to Shakespeare's home and was an important man in Stratford. He married Shakespeare's elder daughter in 1607 and was for a period of 15 or 20 years intimately associated with the family before the dramatist's death. Leftwich remarks,⁶ "I think it probable that Hall's prominence as a physician and his easy availability to Shakespeare for information regarding medical truth may in part at least explain some of the rather remarkable intuitions which Shakespeare shows regarding medical matters."

Shakespeare was interested not only in general medicine, surgery, and physiology,⁷ but in mental diseases and all kinds of psychopathies. For some reason the major tragedies, of the period 1601 to 1608, bring mental aberrations to the fore as their main feature, as though for some reason the writer's mind was absorbed in the subject. The introverted Hamlet feigned schizophrenia, and Ophelia showed the signs of the real disease. Othello (IV. i, 51, etc.) and Julius Cæsar (I. ii, 249-256; II. i, 195; ii, 1-82; III. i, 60-73)—the one suspicious to a paranoid degree, with outbreak-

⁶ "Shakespeare's Handwriting and other Papers" by Ralph W. Leftwich, includes the author's lecture, January, 1918, on "John Hall, Physician." The Worthing Gazette Company, England.

⁷ For instance, Sir St. Clair Thomson quoted "Julius Cæsar" II. i, 289 in his address on "Shakespeare and Medicine" as evidence that Shakespeare knew the blood circulated through the body and back to the heart. Harvey published his "*De Motu Cordis*, etc." in 1628, 27 years after "Julius Cæsar" appeared. (Leftwich, *loc. cit.*, p. 77.)

ing, savage violence; the other painted as weak, vain, and superstitious—both were epileptic, and in the plays are made to reveal evidence of the effects of the disease upon their personalities. Lear is made to play the part of a senile dement, while young Edgar's pretended insanity is a clear-cut imitation of acute mania (*King Lear* III. iv, 45-189), the idea-association of which sounds as though gained from observation of actual cases. Lady Macbeth's somnambulism and her active episodic outbreaks with amnesia show that Shakespeare had considerable insight into the peculiar behavior of hysteria (*Macbeth* V. i, 1-88), and he makes Macbeth demand psychotherapy rather than physic for its treatment (V. iii, 38-47).

Finally, at the close of this seven year period of absorption in psychotic and psychopathic personalities, a new type of person is brought forward to play the old part of Timon, the misanthrope. The procession, consisting of Julius Cæsar, Hamlet and Ophelia, Othello, Lear and Edgar, then Lady Macbeth, is now completed as Timon appears in a background of venereal disease, the draperies decorated with pictures of syphilis while the hero rages through the part of a rapidly progressing organic dementia to his premature death.

SYPHILIS IN THE SIXTEENTH CENTURY.

We know from the growing attention to syphilis in medical and general literature from the year 1500 onward that it had appeared as a new disease; or, if it had existed before in Europe, it had at that time flared into unusual activity. Whether brought by Spanish sailors from America, or whether a torpid strain of spirochætes in the late fifteenth century suddenly became virulent, the disease then spread over Europe as a devastating plague. Following the description by Leonicens in 1497 of the symptoms of syphilis, the medical and general literature of the day devote more and more attention to the disease. It is discussed under various names⁸ and is said to have worked its ravages upon rich and poor,

⁸ Hieronymus Fracastor's poem "Syphilis" was published in 1546 and appears to be the first writing in which the disease was called by that name. It gives strikingly adequate descriptions of the symptoms and of the terror aroused in Europe by its destructive effects. The poem narrates that the

aristocrat and beggar. As one writer says, all were involved from the Pope on his throne to the humblest workman. Shakespeare's "Timon of Athens" was prepared for publication probably about 1608, a period when the interest in lues was intense. It is the only one of his plays in which this wide-spread, popular interest in syphilis is reflected.

TIMON AS A PARETIC DEMENT.

Shakespeare's play, therefore, not only introduces this widely discussed venereal disease into the old story as a totally new embellishment, but it redraws the familiar Timon of older periods and carries his career rapidly through stages that resemble in detail those of the particular form of syphilitic brain disease now well known as paretic dementia, which is perhaps the most picturesque of all mental diseases and, therefore, likely to impress an observant dramatist. The sudden breakdown of the finest types of personality

Spanish sailors came in contact with the disease in "the islands of America" but does not associate it with venery.

In "A Second Elizabethan Journal" by Harrison, G. B., New York, 1931, on page 84 under the date March 30, 1596, reference is made to "A Book of Surgery": "Mr. William Clowes, one of the Queen's surgeons, hath written a profitable and necessary *Book of Observations*, for all those that are burned with the flame of gun-powder or wounded by musket or caliver shot, and such like accidents, relating the cases and cures of many of his own patients; also added thereto a treatise of *lues venerea*." On page 159 for December 25, 1596, appears the notice of "A Book Concerning the Spanish Sickness": "A book by Dr. Peter Lowe, chirurgion in ordinary to the French King, entitled, 'An easy, certain and perfect method to cure and prevent the Spanish sickness,' being dedicated to the Earl of Essex (*cf. infra* note 13), and treating of the causes, signs and cures of this disease. This disease was brought among Christians in the year 1492 by a Spaniard and some women who came from the new found Isles Occidental; afterward in 1493 when King Charles VIII of France was besieging Naples with a puissant army, some of the Spaniards came to him, of which Columbus was chief, and spread this pernicious seed, terming it the 'Indian sickness,' which since hath its course not only among the Spaniards, who call it the 'Italian sickness,' but also among the Italians, who call it the 'malady of Naples,' for it began first to flourish in Naples. Amongst Frenchmen it is called the 'Spanish sickness'; in England the 'great pox'; in Scotland the 'Spanish fleas'; some call it the 'underfoot' because the infection often cometh by treading with the bare foot upon the spittle of the diseased. Some ignorant malicious people, saith he, call it the 'French disease,' without any cause or reason."

as the syphilitic virus destroys the victims' brain cells has always impressed both medical and non-medical observers.

A common picture to-day of paretic dementia is that of a cultured man who becomes careless, unreliable, then irritable and boastful. He loses foresight, neglects his affairs, and wastes his money without concern. Grandiose ideas press him to greater extravagance. Bookkeeping seems slavish. Gusts of anger lead to violence. Maudlin sentimentality alternates with bitterness and hostility. As the dementia proceeds, self-restraint is lost; conversation and behavior are often coarsely sexual. Expansive ideas of wealth and greatness are taken as representing realities. Bodily strength is lost; paralysis and death from apoplexy are often nature's means of removing the player from the stage.

* * * *

We are left, then, with a problem that arouses interest but for which history as yet supplies no answer. Why did the author of Shakespeare's "Timon of Athens" depart from all earlier models by dragging into the later acts of the play these lurid and withal strangely accurate descriptions of syphilis? And why did the author first turn Lucian's misanthropic victim of ingratitude into a shrewd and powerful nobleman and then picture him as degenerating⁹ through the common stages of paralytic dementia to a rapidly fatal termination? Of course, Shakespeare had no knowledge of paretic dementia as a disease, though it is possible that he knew the victims of syphilis sometimes suffered mental impairment. Fracastor had told of the initial "languor and depression, the mind growing heavy," while Stubbes¹⁰ tells that "whoredom * * * impaireth the hearing * * * dulleth the spirits * * * hurteth the

⁹ Professor Parrot (Shakespeare Association, Oxford University Press, 1923, "The Problem of Timon of Athens") notes the inconsistency of the Timon of I. i, 95-151 with that of the later acts. He considers the former section as evidence that Shakespeare wrote that part of the play; the latter as proof that a cruder writer had garbled Shakespeare's finer portrait. If the writer of this play was using a contemporary paretic as the model for a modernized Timon, the inconsistency in so far as the characterization is concerned disappears. The nobler character has degenerated into that of a dement.

¹⁰ Stubbes, Phillip, "The Anatomie of Abuses Contayning a Discoverie * * of such notable Vices, etc.," 1583, edited by Furnival, New Shakespeare Publications, Series VI. No. 4.

memorie * * * induceth old age * * * bringeth death before nature urge it." Haslam in 1798 published what was probably the first clear description of paralytic dementia, though it had occurred in Europe long before Haslam called attention to it as a distinct disease entity. Its dependence upon the syphilitic spirochæte was not demonstrated until our own day.

The description of the symptoms and the stages of this disease as we have noted them in this play is so accurate that, in view of the writer's ignorance of such a process as a recognized form of sickness, one is forced to suppose that he is merely describing from nature the changes that he had witnessed in a contemporary patient. It may be that the irritability of some contemporary nobleman, who had passed through the stages of syphilis to general paresis, had taken the form of caustic misanthropy and thereby had recalled to the writer's mind the arch misanthrope of history, Timon of Athens, and suggested the redrawing of Lucian's rustic hero with this high-born person as the model.¹¹ In that day syphilis was looked upon as was smallpox or bubonic plague, not as a disgrace, but a misfortune. It thus turned out that the venereal and luetic subjects discussed by the unfortunate syphilitic misanthrope, not being taboo, were brought into the play with him.

That Shakespeare made use of current events and personalities both in modeling his plots or characters and in impressing political and other teachings is obvious. There is convincing evidence that Henry VIII suffered with syphilis, though there is but little to support the diagnosis of parietic dementia. Francis I of France, who met Henry on the Field of the Cloth of Gold, as described in the opening lines of Shakespeare's "Henry the Eighth," died after a chronic illness which was probably syphilis. "Those suns

¹¹ After this paper was written, an earlier contribution by Dees was discovered in which he had assumed "that Shakespeare has taken the chief figure of this drama from life, and probably Timon corresponds to a distinguished contemporary." The reasoning of Dr. Dees, by which he reaches the conclusion that Shakespeare's Timon was a victim of manic-depressive insanity, is based upon symptoms which are more characteristic of parietic dementia, and overlooks symptoms that are alien to the picture of manic-depressive psychosis but characteristic of paresis. It also fails to explain the prominence given in the play to syphilis. Dees, "Timon von Athen, Drama von Shakespeare nach psychopathologischen Gesichtspunkten erklärt," *Ztschr. f. die ges. Neur. u. Psychiat.* 28; 50, 1915.

of glory, those two lights of men, met in the vale of Andren * * *. They clung in their embracement, as (if) they grew together, which had they (done), what four throned ones could have weighed such a compounded one?" But the strutting of both was marred by disease.

The story was handed down that Francis had commandeered the pretty wife of one of his citizens. The husband not being a tame Uriah went afield, got him a chance, infected his wife, then sent her thus endowed to Francis' bed.¹²

Mary Tudor and Edward showed evidence of inherited syphilis, and Elizabeth's limitation of physical power was no doubt due to diseased germ plasm, though I find no evidence that she inherited syphilis. Cardinal Wolsey¹³ was accused of having syphilis and of having infected Henry by blowing his breath upon the King—truly a work of super-erogation.

Ivan the Terrible, so prominent in the English mind of Shakespeare's period because of his persistent suit for Elizabeth's hand, may have had syphilis, as some writers suggest, but I find no evidence of neural syphilis and certainly none of general paralysis. In my opinion, Ivan was of psychopathic personality, of the cyclothymic type.

Wechter¹⁴ proposes "to set forth several curious similarities between Shakespeare's Timon and Robert Devereux, second Earl of Essex." This writer also sees Francis Bacon in Ventidius. We have no evidence that Essex had paresis, though he himself mourned, "I have bestowed my youth in wantonnes, luste, and

¹² Later French historical writers consider the evidence as to Francis' syphilis insufficient. But Louis Guyon in his "Diverses Leçons de Louis Guyon, sieur de la Nauche," Lyon 1610, t. 11, page 109) repeats this story as part of the clinical record of Francis. Part of the evidence centers on the twenty-fifth novel in "The Heptameron of Margaret, Queen of Navarre," in which this sister of Francis uses the story as one of the romantic adventures of the "young prince, who told me the story, forbidding me to name him." (L'Heptameron, etc., A Paris, 1853). It is far from certain that Francis had syphilis, yet after reviewing the evidence it seems to me probable that his physical ailments were of that nature.

¹³ Cf. Delmage, James A., "Towards National Health, etc., from Roman to Victorian Times," page 94, London, 1931.

¹⁴ Wechter, Dixon, "The Purpose of Timon of Athens," Pub. Mod. Lang. Assn., 43, 701-721, 1928.

uncleannes." There are, however, many points of resemblance between Essex and Shakespeare's Timon. These are so impressive that if documentary proof existed that he had the disease, we would have a satisfactory solution to the problem here presented.

These are only a few of the notable personages of the time who suffered with syphilis and who presumably were known to Shakespeare. Amongst them it is highly probable that there were a number of paralytic demented, one of whom may have become anonymously immortalized as the model for Shakespeare's Timon of Athens.

The text (V. i, 188-190; 225-226) leaves the reader in doubt as to whether the hero of the play committed suicide or, realizing that he was near death because of some ominous occurrence in the course of his disease, carried his misanthropic attitude to the very end by dictating his own epitaph as a Parthian shot to humanity. His old steward Flavius was with him, and the context suggests that it was he who arranged that Timon's last caustic message should appear on his tombstone. The Shakespearean play, of course, had to end with this epitaph. Its quality is in keeping with the intellect of the dull old Athenian and with the broken down Timon of the Shakespearean play rather than with the subtlety of the Timon who appeared in the first act. The writer of the play gives the supposedly authentic epitaph of the old Greek Timon which Plutarch said had appeared upon the tombstone at Halae:

"Here lies a wretched corse of wretched soul bereft:
Seek not my name: a plague upon you wretched
catiffs left!"

However, the dramatist (or possibly a later meddler) added to this the garbled epitaph produced by Callimachus, which is also quoted by Plutarch:

"Here lie I, Timon, who alive all living men did hate.
Pass by and curse thy fill: but pass, and stay not
here thy gait."



HUGHLINGS JACKSON'S VIEWS ON DEGREES OF AUTOMATIC ACTION, AS APPLIED TO A CASE OF CATATONIA.

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Hughlings Jackson's views on the nervous system¹ have, I believe, a profound bearing on many psychiatric problems. In a previous paper² I sought to apply these views to a few mental symptoms. In the present paper I shall try to apply them to a phenomenon observed in a catatonic patient at the Harrisburg State Hospital.

The patient entered the hospital at the age of 26, in a catatonic stupor. I shall give only those details necessary for the present discussion. While under our observation she had a partial remission, lasting several months, during which she showed the following characteristics: She was friendly and not aloof. She did not actively disobey the examiner (save in regard to eating; see below). At the same time, she was exceedingly shy. When one talked to her, her manner was that of a bashful child; she smiled, lowered her head in embarrassment, and required often the most patient encouragement before she answered a question. "Because" of certain delusions, which do not concern us here, she would not eat, and had to be tube-fed. She helped the nurses in the ward work, and assisted in caring for certain helpless patients, faithfully executing the tasks assigned to her. It was striking to see her devotedly spoon-feeding fellow-patients who could not or would not eat, while at the same time she herself had to be tube-fed.

The phenomenon that will here engage our attention consists of the fact that although the patient was very reticent when one spoke to her, she talked with perfect ease whenever a more "natural" occasion for speech arose. For example, one day she found a

¹ Selected Writings of John Hughlings Jackson. London: Hodder and Stoughton, 1931-1932.

² M. Levin: Hughlings Jackson's Views on Mentation: their Value for the Psychiatrist. Archives of Neurology and Psychiatry, 30: 848 (October) 1933.

thimble on the floor and brought it to the head nurse, saying, without the least trace of embarrassment, "Miss Miller, I found this thimble on the floor: I don't know if it belongs to anyone or not." At the same time, when Miss Miller asked her, "How do you feel?" the patient dropped her head bashfully and said nothing. The question arises, Why is it that the patient habitually was untalkative when spoken to, yet talked freely when the occasion demanded spontaneous speech? It may be said that she was self-conscious and therefore was embarrassed when asked questions. This formulation is, I think, far from satisfactory. A more acceptable explanation lies in Jackson's views on automatic action, as applied to speech.

The activities of the organism, according to Jackson, vary in the degree to which they have become automatic. Viewing the nervous system from the point of view of a series of levels, he said that the lowest levels are most organized, most automatic, and least voluntary; the highest levels are least organized, least automatic and most voluntary. For a full discussion of this view the reader is referred to Jackson's Croonian Lectures [II, 45].* When a part of the nervous system is destroyed, the most automatic functions represented in that part are least interfered with, while the least automatic functions are most interfered with. For example, in hemiplegia movements of the shoulder are least, while movements of the fingers are most, interfered with.

This law—the least automatic functions are most easily disturbed, while the most automatic functions are least easily disturbed—Jackson, with admirable insight, applied to the problems of speech in his paper "On Affections of Speech from Disease of the Brain" [II, 155]. He showed that there are three kinds of utterance: (1) Emotional utterance, which expresses a feeling. (2) Propositional utterance, which expresses a statement or proposition. (3) The third type, which Jackson described but did not name, is that in which the subject utters a word or phrase when requested to do so. For the sake of convenience, I shall refer to this as "volitional" utterance, recognizing that this term is not an ideal one.

As an illustration, we may, following Jackson, consider the use of the word "no." (1) A man may angrily say "No!" when a child

* Bracketed figures refer to volume and page of the "Selected Writings of John Hughlings Jackson."

is about to do something wrong, or he may cry "No!" to indicate astonishment at hearing some incredible bit of news. Both of these constitute emotional use of the word. (2) A man may say "No" in response to a question requiring dissent. This is propositional use of the word. (3) A man may say "No" when one asks him to say it. This is volitional use of the word.

These three types of utterance, in the order given, are arranged in order from most automatic to least automatic, *i. e.*, emotional utterance is most automatic, while volitional utterance is least automatic (or, what is the same thing, most voluntary). Jackson stated this as follows [II, 134]: "There are three degrees of use of the word 'no.' It is used most voluntarily (as speech) when the patient can 'say' it when told. It is used more automatically when the patient can 'utter' it in reply correctly; and it is used most automatically when it only comes like an ordinary interjection with states of feeling."

Jackson showed that in cases of aphasia the three types of utterance are interfered with in unequal degree, the volitional type being most interfered with, the propositional type less, and the emotional type least. Thus, his patient Dow was unable to say "No" when requested to do so, yet when asked, "Are you 90 years old?" he replied "No" promptly. Also, when his child misbehaved he shouted "No! No! No!" in an angry tone [II, 134, foot-note, and II, 177]. Jackson cited many other illustrations of this rule, including the fact that aphasic patients who have lost all or nearly all propositional utterance may yet retain the ability to swear, to utter such ejaculations as "Oh dear!" and to utter timely cries of warning, all of these being instances of emotional utterance.

We now return to my catatonic patient. When in the course of her ward work she spontaneously speaks to the nurse, this is an instance of propositional utterance. When one asks her a question, the anticipated reply also is propositional utterance. I submit, however, that these two utterances would not occupy the same position in a scale of utterances arranged according to degree of automaticity, ranging from the most automatic (emotional utterance) to the least automatic (volitional utterance); on the contrary, the utterances anticipated when one questions the patient are nearer to the "volitional end" of the scale than are those spontaneously addressed to the nurse. The essence of the volitional use of "no" is, we might

say, its artificiality: we ask the patient to say a word that the situation otherwise does not call for. On the other hand, when the aphasic patient says "No" emotionally or propositionally, he does so in response to a situation that naturally calls for the word. The same difference is seen in the two situations confronting my catatonic patient. When the occasion arises for her to tell the nurse something in connection with her work, the situation "naturally" calls for the utterance; when, on the other hand, she talks in response to questions, the situation is relatively "artificial." In my opinion, therefore, her relative silence in the latter situation is comparable to the inability of some aphasic patients to say "No" volitionally. We see in her case a special instance of the general rule that in dissolution of the nervous system the most voluntary functions are most affected, the most automatic least.

So far my remarks have been confined to the topic of utterances. I have now to mention that the phenomenon here described occurs also in connection with simpler movements, *e. g.*, protrusion of the tongue. Jackson [II, 153] alluded to an aphasic patient who could not protrude the tongue when asked to do so, yet protruded it after drinking, when, as was her custom, she licked her lips. [This patient retained automatic protrusion, while having lost "volitional" protrusion.] Case 3 of Wilson and Walshe³ was that of a woman with left-sided motor symptoms occurring in consequence of disease of the highest centers. One of the symptoms consisted of inability to perform on request certain movements which automatically she performed quite well. Wilson and Walshe called attention to the occurrence of the same phenomenon in cases reported by Goldstein and Kroll.

³ S. A. K. Wilson and F. M. R. Walshe: The Phenomenon of "Tonic Innervation" and its Relation to Motor Apraxia. *Brain*, 37: 199, 1914.

THE EFFECTS OF SODIUM AMYTAL ON THE METABOLISM.*

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WITH THE TECHNICAL ASSISTANCE OF
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Surprisingly little has been written of the effects of the sedatives on the metabolic processes of the body. This is particularly true in the case of the basal metabolism. Because sedatives have such widespread clinical use, it was considered important to study the effects of one of them—sodium amytal—on certain metabolic activities in the human subjects. Studies were made of the basal metabolic rate and of the arterial and venous contents of oxygen, carbon dioxide, dextrose, and cholesterol. Blood from the internal jugular vein was obtained for the study of possible alterations in the various metabolites in their passage through the brain. Puncture of the internal jugular vein in man was undertaken in this laboratory in 1927 by Myerson, Halloran and Hirsch¹ and has since then fulfilled the original hope that by comparing the contents of oxygen and dextrose from an artery and the vessel containing pure "brain" blood—the internal jugular vein—greater knowledge regarding intracranial metabolism might be obtained. This method was utilized in the present investigation.

A. METHODS AND MATERIAL.

Inmates of the Boston State Hospital were studied. These were usually patients diagnosed as dementia præcox, although several patients with dementia paralytica were utilized. The patients were sent either to the operating room or the research laboratory in

*From the Division of Research, Abraham Myerson, Director, Boston State Hospital and the Department of Neurology, Tufts College Medical School.

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the morning after a 12-hour fast and an hour's rest in bed. In the first series of experiments, sodium amytal (Lilly) was injected intravenously in large, usually 1.0 gram doses, and the basal metabolic rate and the various blood constituents studied, one-half to one hour after the drug was given. The basal metabolism and the blood chemical studies were made on separate days. Blood was obtained as nearly simultaneously as possible from the brachial artery,* the internal jugular vein, and one of the basilic veins. In a second series of experiments, small (usually 0.25 gm.) doses of sodium amytal were injected intravenously and the basal metabolic rate and certain clinical data obtained. No blood chemical studies were made in this series. In a third group of cases, the effect on the basal metabolic rate and the blood cholesterol of the same drug given orally in doses of 0.3 gram three times daily was determined. In a fourth group, in whom hyperthyroidism had been induced by the use of large amounts of thyroid extract, the effect of sodium amytal given both intravenously and orally was studied.

The pulse, rectal temperature, arterial blood pressure and the various clinical manifestations were studied before and after administration of the drug. The basal metabolic rate was determined in the indirect fashion, the Benedict-Roth apparatus being used. No difficulty was ordinarily encountered in the determination of the metabolic rate after sodium amytal had been given, despite the fact that the patient was usually in deep sleep. The oxygen content of the blood was determined by the method of Van Slyke and Neill;² the dextrose content by the method of Folin and Wu;³ the cholesterol content by the method of Bloor, Pelkan, and Allen.⁴

B. RESULTS.

I. LARGE DOSES INTRAVENOUSLY.

(Tables Ia, Ib, Ic, IIa, IIb. Charts I, II, VI, VII.)

Sodium amytal was prepared for intravenous injection by dissolving it in distilled water. After preliminary studies had been made, the drug was injected slowly during a period of five to ten

* After two years of investigation, it was found that the contents of the various metabolites in the various *arteries* showed no appreciable differences. Puncture of the carotid artery was therefore discarded.

minutes in dosage varying from 0.5 to 1.0 gm., the latter dosage being the usual one. The patient usually fell asleep within 4 to 6 minutes while the needle was still inserted in the vein. Sound sleep, indistinguishable from the normal, always occurred. At times, the patient stirred when the blood-pressure cuff was inflated and occasionally struggling occurred when blood was being obtained from the various vessels. The rectal temperature usually

TABLE I-A.
SODIUM AMYTAL—LARGE DOSAGE INTRAVENOUSLY.
BLOOD SUGAR CONTENT.

Case.	Diagnosis.	Sugar content.							
		Brachial artery.		Jugular vein.		Basilic vein.		Brachial—Jugular difference.	
		Before.	After.	Before.	After.	Before.	After.	Before.	After.
J. M.	G. P.	102	99	98	96	101	98	4	3
A. F.	D. P.	108	101	90	90	99	95	18	11
T. A.	D. P.	118	111	100	110	110	...	18	1
H. B.	G. P.	105	105	100	102	105	103	5	3
H. P.	D. P.	91	87	81	80	90	84	10	7
J. B.	D. P.	98	91	82	81	86	90	16	10
W. B.	G. P.	141	109	140	106	...	...	1	3
A. Fr.	D. P.	103	91	91	89	101	91	12	2
M. G.	D. P.	101	88	83	74	...	...	18	14
W. E.	D. P.	130	124	124	108	...	...	6	16
H. B.	G. P.	102	105	90	102	...	...	12	3
A. F.	D. P.	98	93	85	84	...	...	13	9
H. H.	D. P.	105	107	94	100	...	...	11	7
A. M.	D. P.	89	94	85	84	...	...	4	10
J. H.	G. P.	116	111	105	98	...	...	11	13
C. P.	D. P.	108	106	92	100	...	...	16	6
R. S.	D. P.	97	92	67	67	...	...	30	25
Average difference.....								12.1	8.4

fell distinctly at the end of one-half hour, the fall averaging 1.1° F. and varying from 0.5 to 1.6° F. The temperature at the end of the hour showed no further change, although at times it was slightly higher, at times a trifle lower. There was always a distinct and marked fall in the arterial blood-pressure which occurred within the first few minutes after administration of the drug. The greatest drop occurred usually in the systolic pressure, the diastolic pressure being but slightly affected. The average fall in systolic

TABLE I-B.
SODIUM AMYTAL—LARGE DOSAGE INTRAVENOUSLY.
CARBON DIOXIDE CONTENT, OXYGEN CONTENT AND SATURATION.

CARBON DIOXIDE CONTENT, OXYGEN CONTENT AND SATURATION.																					
Case	Diag- nosa.	Carbon dioxide content.						Oxygen content.						Oxygen saturation.						Brachial— jugular difference in oxygen content.	
		Brachial artery.		Jugular vein.		Basilic vein.		Brachial artery.		Jugular vein.		Basilic vein.		Brachial artery.		Jugular vein.		Basilic vein.			
		Before.	After.	Before.	After.	Before.	After.	Before.	After.	Before.	After.	Before.	After.	Before.	After.	Before.	After.	Before.	After.		
J. M.	G. P.	48.5	49.4	53.8	54.2	54.8	53.2	18.0	17.2	12.6	13.0	9.3	12.5	90	86	63	65	46	62	5.4	4.2
A. F.	D. P.	48.7	47.4	55.1	55.4	53.3	56.9	17.9	17.6	11.8	12.7	14.0	7.3	93	91	61	66	73	38	6.1	4.9
T. A.	D. P.	47.6	48.3	54.5	53.8	55.0	...	17.6	16.9	10.5	11.2	10.4	...	98	94	58	62	57	...	7.1	5.7
H. B.	G. P.	44.6	51.9	54.9	56.2	52.9	52.9	21.1	19.0	14.4	14.7	13.0	18.6	98	88	67	68	60	...	6.7	5.7
H. P.	G. P.	52.6	55.5	59.0	61.2	62.9	63.1	18.1	16.9	12.0	11.3	6.3	11.9	92	86	61	57	32	61	6.1	5.6
J. B.	D. P.	45.6	50.0	54.5	54.5	57.4	57.4	18.6	17.5	11.9	13.6	12.5	7.4	95	89	60	69	64	37	6.7	3.9
W. B.	G. P.	46.5	46.4	50.9	52.9	...	...	16.6	16.0	11.6	10.0	...	...	95	92	66	57	...	85	5.0	6.0
A. Fr.	D. P.	45.1	52.8	53.1	56.5	49.7	54.5	20.5	18.7	13.0	15.3	13.5	17.6	98	90	62	74	65	...	7.5	3.4
M. G.	D. P.	45.3	47.7	52.1	54.1	...	...	18.1	19.0	14.1	11.5	...	...	86	90	67	54	...	...	4.0	7.0
W. E.	G. P.	41.5	48.1	52.1	56.5	...	...	18.4	17.6	10.3	8.6	...	...	96	92	54	45	...	...	8.1	9.0
H. B.	G. P.	49.7	50.8	56.0	55.2	...	...	20.9	19.6	14.6	15.0	...	...	98	92	68	70	...	...	6.3	4.6
A. F.	D. P.	45.2	46.9	51.3	54.1	...	...	19.8	17.4	10.8	10.6	...	...	99	87	54	53	...	...	9.0	6.8
H. H.	D. P.	48.5	49.5	54.1	55.6	...	...	21.2	20.4	15.5	16.0	...	...	94	91	69	71	...	...	5.7	4.4
A. M.	D. P.	47.2	48.8	54.3	56.6	...	...	20.0	18.5	13.5	12.9	...	...	99	92	67	64	...	...	6.5	7.0
J. H.	G. P.	46.9	48.0	52.2	54.3	...	...	21.3	20.2	14.8	13.2	...	...	97	96	67	60	...	...	7.3	7.3
C. P.	D. P.	50.9	51.1	58.0	60.0	...	...	18.1	17.8	10.8	10.5	...	...	95	93	56	55	...	...	5.6	4.6
R. S.	D. P.	47.0	49.3	52.9	54.8	...	...	18.1	17.2	12.5	12.6	...	...	97	92	67	67	...	...	...	...
														Average difference.....				6.4		5.7	

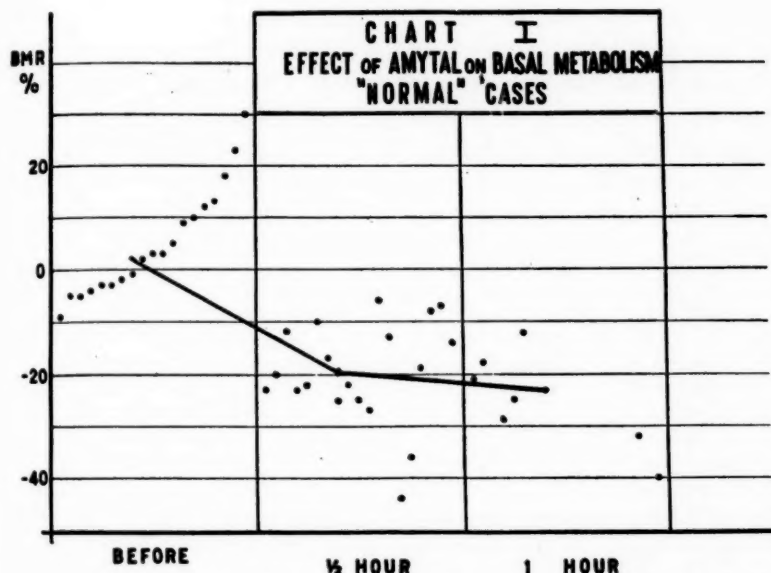


CHART I.—The effect of sodium amytal given intravenously on the basal metabolic rate in 19 cases. Each dot represents the metabolic rate either before or after the administration of the drug. The solid line represents average results. Note the marked fall in the average metabolic reading following sodium amytal.

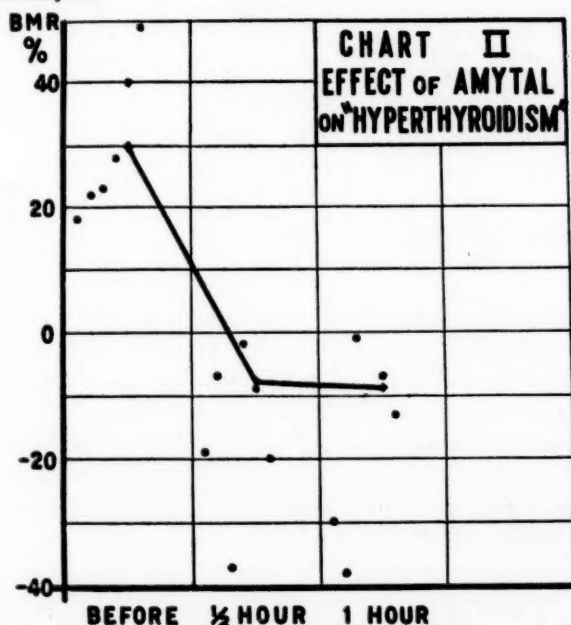


CHART II.—The effect of sodium amytal in large doses given intravenously to six patients in whom hypermetabolism had been introduced by large doses of thyroid extract. There was striking drop in metabolic rate following administration of the drug.

pressure was 27 mm. of mercury with a variation in fall from 0 to 48 mm. The average fall in diastolic pressure was 12 mm., the pulse pressure thus becoming definitely diminished. There was marked variation in the behavior of the reflexes, which in some cases became totally abolished. In some cases the knee-jerks became increased, and in a few cases ankle clonus was observed. The Babinski response did not however become positive in any case. The pupils usually became definitely constricted.

TABLE I-C.
SODIUM AMYTAL—LARGE DOSAGE INTRAVENOUSLY.
BLOOD CHOLESTEROL CONTENT.

Case.	Diagnosis.	Cholesterol content.							
		Brachial artery.		Jugular vein.		Basilic vein.		Brachial—Jugular difference.	
		Before.	After.	Before.	After.	Before.	After.	Before.	After.
J. M.	G. P.	252	245	242	228	250	231	10	17
A. F.	D. P.	156	149	156	150	155	150	0	-1
T. A.	D. P.	201	201	200	200	201	...	1	1
H. B.	G. P.	137	134	139	133	138	135	-2	1
H. P.	D. P.	114	111	115	108	114	109	-1	3
J. B.	G. P.	132	139	141	138	139	137	-9	1
W. B.	G. P.	207	165	175	157	...	...	32	8
A. Fr.	D. P.	189	186	189	205	187	188	0	-19
M. G.	D. P.	123	111	116	105	...	...	7	6
H. H.	D. P.	180	181	182	179	...	...	-2	2
A. M.	D. P.	184	187	185	184	...	...	-1	3
J. H.	G. P.	194	192	196	197	...	...	-2	-5
C. P.	D. P.	182	180	178	180	...	...	4	0
R. S.	D. P.	114	102	100	94	...	...	14	8
Average difference.....								3.64	1.78

The most striking finding was the marked and rapid drop in the basal metabolic rate, which fell 7 to 70 per cent from its original level, the average fall being 26 per cent. The basal metabolic rate after the administration of sodium amytal varied in this series from minus 6 per cent to minus 44 per cent. In two of seven instances, the metabolic rate at the end of an hour was definitely lower than at the end of one-half hour. In both of these cases, the initial metabolic rate was somewhat elevated.

TABLE II-A.
SODIUM AMYTAL—LARGE DOSAGE INTRAVENOUSLY.
BASAL METABOLISM AND CLINICAL STUDIES.

Case.	Diag- nosis.	Basal metabolism.			Temperature.			Pulse rate.			Blood pressure.		
		Before.	1 hour.		Before.	1 hour.		Before.	1 hour.		Before.	1 hour.	
			1/2 hour.	1 hour.		1/2 hour.	1 hour.		1/2 hour.	1 hour.		1/2 hour.	1 hour.
T. A.	D. P.	- 9	-23	-21	97.6	96.5	96.6	56	76	72	106/68	88/48	86/60
E. B.	D. P.	- 5	-20	-18	98.5	97.6	97.6	64	72	64	116/70	90/64	90/60
T. A.	D. P.	- 5	-12	...	97.6	96.4	...	60	58	...	94/60	86/60	...
A. F.	D. P.	- 4	-23	-29	98.5	97.5	97.8	64	80	72	90/40	90/40	84/46
A. M.	D. P.	- 3	-22	-25	97.4	96.8	96.8	88	84	84	120/80	176/52	120/80
W. E.	D. P.	- 3	-10	-12	98.0	96.8	96.4	72	88	88	120/68	92/50	92/50
H. B.	G. P.	- 2	-17	...	98.0	96.5	...	84	88	...	114/62	100/64	...
C. P.	D. P.	- 1	-25	...	98.6	97.2	...	76	64	...	142/82	100/60	...
C. Pe.	D. P.	+ 2	-22	...	...	...	...	88	84	...	118/70	94/62	...
J. H.	G. P.	+ 3	-25	...	...	...	...	84	96	...	120/80	98/70	...
D. O.	A. L. C.	+ 3	-27	...	98.0	97.2	...	56	78	...	156/102	108/80	...
F. B.	G. P.	+ 5	-6	...	97.5	97.0	...	56	88	...	116/70	80/60	...
E. B.	D. P.	+ 9	-13	...	98.5	97.6	...	72	76	...	116/76	104/70	...
E. H.	D. P.	+ 10	-44	...	98.8	97.4	97.1	80	68	52	120/60	86/50	82/44
H. H.	D. P.	+ 12	-36	...	...	...	...	80	100	...	116/80	90/64	...
A. M.	D. P.	+ 13	-19	...	...	...	...	104	106	...	126/88	84/60	...
J. B.	D. P.	+ 18	-32	...	99.2	97.6	97.8	84	88	72	124/64	106/60	98/60
R. S.	D. P.	+ 23	- 7	...	97.6	96.8	...	72	92	...	124/74	90/60	...
H. B.	G. P.	+ 30	-14	-40	97.8	96.6	96.6	84	80	76	120/80	82/56	80/54

TABLE II-B.
SODIUM AMYTAL—LARGE DOSAGE INTRAVENOUSLY.
"HYPERTHYROID" PATIENTS.

Case.	Diagnosis.	Basal metabolism.			Temperature.			Pulse rate.			Blood pressure.		
		Before.	½ hour.	1 hour.	Before.	½ hour.	1 hour.	Before.	½ hour.	1 hour.	Before.	½ hour.	1 hour.
R. S.	D. P.	+18	-19	-30	98.6	98.0	97.8	94	100	88	92/60	90/58	82/44
C. P.	D. P.	+40	-9	-7	98.7	97.8	98.0	80	96	78	122/70	88/50	98/50
H. P.	D. P.	+23	-37	-1	99.2	99.0	96.4	72	72	66	100/56	84/50	98/56
G. D.	G. P.	+49	-20	-13	98.6	98.2	98.0	90	100	90	144/64	96/50	92/56
J. M.	G. P.	+28	-2	...	98.6	98.0	...	90	92	...	134/80	120/60	...
G. T.	G. P.	+22	-7	-38	98.2	97.6	97.6	84	76	72	120/60	94/56	96/56

TABLE III.
SODIUM AMYTAL—SMALL DOSAGE INTRAVENOUSLY.
BASAL METABOLISM AND CLINICAL STUDIES.

Case.	Diagnosis.	Dose. Gm.	Basal metabolism.			Temperature.			Pulse rate.			Blood pressure.		
			Before.	½ hour.	1 hour.	Before.	½ hour.	1 hour.	Before.	½ hour.	1 hour.	Before.	½ hour.	1 hour.
C. P.	D. P.	0.3	+12	-10	-12	97.4	98.0	98.2	60	58	58	158/88	128/70	110/60
J. N.	M. D.	0.25	+13	-45	+10	99.0	98.6	98.6	72	60	56	110/44	96/36	102/40
J. B.	D. P.	0.25	+11	+24	+33	98.8	98.6	98.6	60	60	72	110/50	90/40	98/50
E. B.	D. P.	0.2	+13	-21	+16	98.6	98.6	98.6	60	60	60	130/60	108/68	114/64
C. P.	D. P.	0.2	+8	+16	+25	98.6	98.6	98.6	72	60	60	120/60	120/80	132/76
S. P.	M. D.	0.2	-4	-11	-11	98.6	98.4	98.4	60	70	70	114/76	108/64	100/68
H. B.	G. P.	0.3	+10	+25	+29	98.0	98.0	97.8	74	80	74	102/66	100/70	90/64
J. M.	G. P.	0.27	+21	+41	+41	97.6	97.2	97.2	96	84	84	140/40	120/64	112/70

The blood chemical findings showed slight, though definite change. The arterial blood sugar usually became definitely diminished, the average diminution being 5.7 mgs. per 100 cc. There was rather marked variation in the content of dextrose from the internal jugular vein after the administration of sodium amytal. The brachial-jugular difference in dextrose content, which averaged 12.1 mgs. per 100 cc. before amytal, became diminished to 8.4 mgs. per 100 cc. after amytal. This definite diminution in arterio-venous difference might be due, as discussed in previous papers,⁵ to a diminution in the dextrose consumption in the brain. Slight diminution in the brachial-jugular difference in oxygen content occurred, the average difference before amytal being 6.4 volumes per 100 cc.; after amytal, this became reduced to 5.7 volumes per 100 cc. The blood cholesterol showed essentially no change.

A small group of patients with an elevated basal metabolic rate produced by long-continued thyroid medication was given large doses of sodium amytal intravenously. This resulted in an extreme drop (averaging 52 per cent) in the basal metabolism.

2. SMALL DOSES INTRAVENOUSLY.

(Table III, Chart III.)

Eight subjects were given small doses (0.2-0.3 gm.) intravenously of sodium amytal. This dosage usually caused slight drowsiness, although in two instances the patients fell into sound sleep. In these cases, marked fall occurred at the end of 30 minutes in the basal metabolic rate, which however returned to its original level at the end of an hour. In the six patients who did not fall asleep, a slight decrease in metabolic rate occurred in two, but in the other four there was a definite increase, varying from 17 to 22 per cent. The temperature was but little affected in this group of cases, diminishing on the average 0.6° F. The blood-pressure also fell in less striking degree than with large doses. The average drop in systolic pressure was 12 mm. of mercury. Although the diastolic pressure fell in three cases, there was no change in the average diastolic pressure after sodium amytal was administered. No observations of the chemical constituents of the blood were made in this series of cases.

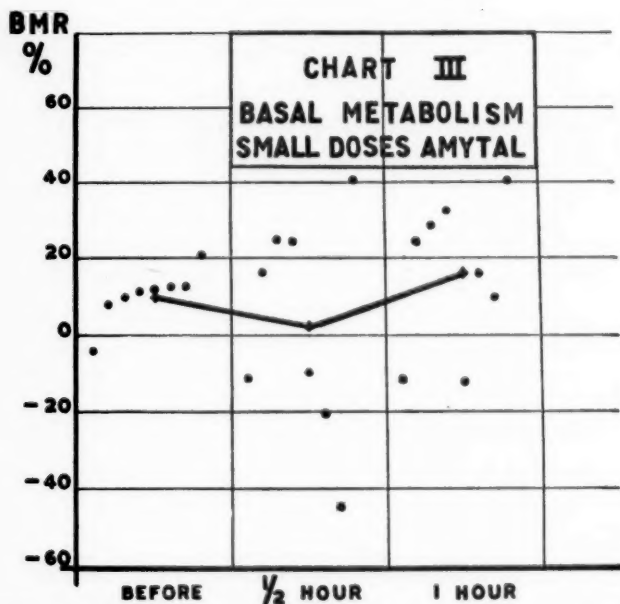


CHART III.—The effect of sodium amytal given intravenously in small doses. Note the variability of the effect.

3. THE ORAL ADMINISTRATION OF SODIUM AMYTAL.

(Table IV, Chart IV.)

Four patients were given sodium amytal in doses of 0.3 gm. three times daily by mouth for a period of about a month. The pulse, weight, blood-pressure, basal metabolic rate, and blood cholesterol content were studied at frequent intervals. The patients, all of whom were examples of dementia præcox, remained at their normal activities, except on the mornings when the basal metabolic rate was determined. Two patients showed no change in weight; the other two gained definitely in weight. No change in pulse rate or blood-pressure occurred. The basal metabolic rate fluctuated within rather marked range. These fluctuations varied in the individual cases. Thus in Case 1 (H. H.) there was at first a definite increase in rate (to plus 28 per cent), followed by a diminution to normal rate and then by another increase. In Case 2 (T. A.) there was at first a rather marked diminution in metabolic rate (to minus 34 per cent) which was followed by an increase and

TABLE IV.
SODIUM AMYTAL—ORAL ADMINISTRATION.
BASAL METABOLISM AND BLOOD CHOLESTEROL.

Case.	Diagnosis.	Date.	Weight.	Basal Metabolism.	Cholesterol.	Pulse rate.	Blood pressure.	Remarks.
H. H.	D. P.	4/5	144	+ 4	180	74	116/72	3 grains sodium amytal t. i. d.
		4/7	143	- 3	175	72	98/56	
		4/11	143	+ 6	174	68	110/60	
		4/14	148	+15	135	84	100/60	
		4/18	147	+28	154	72	98/56	
		4/21	147	+19	145	68	114/40	
		4/25	147	+ 1	185	72	112/40	
		4/28	147	+ 9	198	72	115/45	
		5/2	147	+20	194	80	118/58	
		5/4	148	+15	165	66	116/76	Discontinued.
		5/9	150	+24	138	72	98/40	
		5/16	148	+17	187	72	100/50	
T. A.	D. P.	4/5	135	- 6	201	52	110/70	3 grains sodium amytal t. i. d.
		4/7	134	-14	204	60	100/58	
		4/11	137	-24	209	52	102/64	
		4/14	141	-34	200	70	100/60	
		4/18	137	-25	162	66	98/48	
		4/21	142	+ 5	170	60	104/60	
		4/25	137	+ 9	202	60	112/50	
		4/28	143	+27	180	72	112/50	
		5/2	143½	-10	193	60	100/60	Discontinued.
		5/5	142	+ 3	200	60	102/68	
		5/9	140	- 2	198	60	92/40	
		5/16	135	- 4	206	60	95/50	
A. F.	D. P.	4/5	108	+ 3	155	72	96/60	3 grains sodium amytal t. i. d.
		4/7	108	- 4	174	64	90/52	
		4/11	108	-17	195	72	98/40	
		4/14	108	-13	156	72	100/50	
		4/18	108	-18	206	72	98/56	
		4/21	108	-23	160	72	98/50	
		4/25	108	-15	206	60	90/30	
		4/28	108	+18	191	72	98/50	
		5/2	108	+ 2	192	60	80/28	Discontinued.
		5/5	108	+13	193	60	82/20	
		5/9	107½	- 9	197	60	90/40	
		5/16	108	- 9	206	60	90/40	
A. Fr.	D. P.	4/5	115	- 6	187	80	124/76	3 grains sodium amytal t. i. d.
		4/7	115	+ 1	185	80	124/50	
		4/11	115	+14	192	64	130/35	
		4/14	115	+20	153	84	125/40	
		4/18	115	+39	200	80	125/56	
		4/21	115	-11	185	72	104/58	
		4/25	115	+31	203	80	124/60	
		4/28	115	+22	200	72	120/60	
		5/2	115	+50	210	80	132/60	Discontinued.
		5/5	115	+25	200	70	124/60	
		5/9	115	+20	190	72	124/60	
		5/16	118	+10	210	72	124/60	

then again by a slight diminution. About the same sequence of events occurred in Case 3 (A. F.). Case 4 (A. Fr.) resembled Case 1 in reaction, the metabolic rate increasing at first to plus 39 per cent. This was followed by a diminution in rate and then by another marked increase to plus 50 per cent. Thus, in these few cases, two types of reactions in basal metabolic rate occurred,

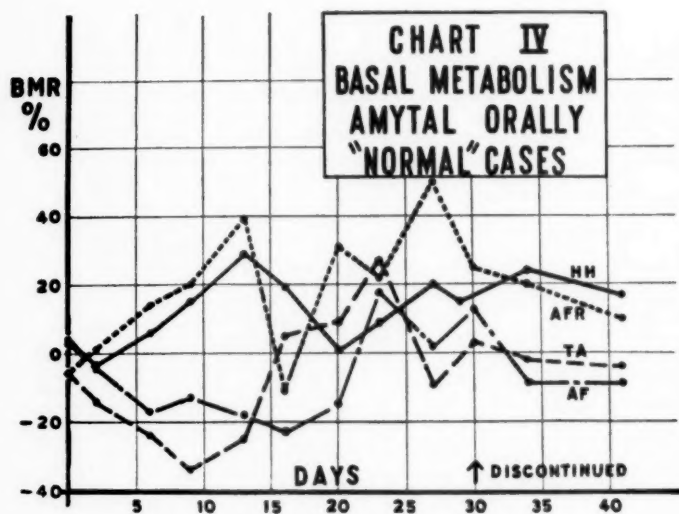


CHART IV.—The effect of sodium amytal on the metabolic rate when given daily by mouth in a group of four patients. Note the variation in effect and the definite drop in two patients during the beginning of the period of observation.

i. e.: (1) a preliminary rise followed by a drop and then by another rise and (2) a preliminary drop followed by an increase.

The blood cholesterol content varied within rather wide ranges. No definite correlation between this chemical constituent and the basal metabolic rate was apparent. From unpublished data recently obtained, we had found that the blood cholesterol content varied rather markedly from day to day within a range of about 50 mgs./100 cc.

4. THE ORAL ADMINISTRATION OF SODIUM AMYTAL TO PATIENTS WITH EXPERIMENTAL HYPERTHYROIDISM.

(Table V, Chart V.)

Four patients in whom hyperthyroidism had been produced by the continued administration of large doses of thyroid extract* were given sodium amytal by mouth in doses of 0.3 gm. three

TABLE V.
SODIUM AMYTAL—ORAL ADMINISTRATION.
"HYPERTHYROID" PATIENTS.

Case.	Diagnosis.	Date.	Weight.	Basal Metabolism.	Cholesterol.	Pulse rate.	Blood pressure.	Remarks.
C. P.	D. P.	3/27	168	+24	129	90	120/60	3 grains sodium amytal t. i. d.
		3/31	170	+25	148	108	124/60	
		4/5	172 $\frac{3}{4}$	+6	150	84	118/60	
		4/7	172	+28	168	100	118/60	
		4/11	174	+7	158	88	.....
		4/14	174	+1	122	100	Discontinued.
		4/18	170	+29	123	108	.....
H. P.	D. P.	3/27	120	+21	107	80	3 grains sodium amytal t. i. d.
		3/31	128	+7	105	84	120/70	
		4/5	128	+39	118	72	102/50	Discontinued.
		4/7	128	+47	152	76	.....
G. D.	G. P.	3/27	145	+39	108	90	3 grains sodium amytal t. i. d.
		3/31	145	+46	149	96	130/60	
		4/5	142	+54	140	104	136/70	Discontinued.
G. T.	G. P.	3/27	134	+22	96	84	3 grains sodium amytal t. i. d.
		3/31	134	+19	120	76	118/60	
		4/5	130	+2	114	72	120/60	
		4/7	134	+10	141	78	.....
		4/11	127	+19	120	80	.....
		4/14	127	+34	98	84	Discontinued.

times daily, the thyroid extract being meanwhile continued. The basal metabolic rate, weight, pulse and blood-pressure were studied. In Case 1 (C. P.) definite diminution in metabolic rate to a normal value (plus 7 per cent) occurred in 14 days but in 21 days there was again a rise to the original level. In Case 2 (N.P.) there was a possible, very temporary diminution in metabolic rate, which was followed by a rather marked increase. In Case 3 (G. D.) no

* These studies will be the subject of another communication.

diminution in the elevated rate occurred. In Case 4 (E. T.) after a preliminary slight diminution in rate which occurred in 8 days, there was again a rise to the original level in 14 days. Thus Case 1 showed the only definite diminution in basal metabolic rate. In this case and in Case 4 it was noted that the blood cholesterol

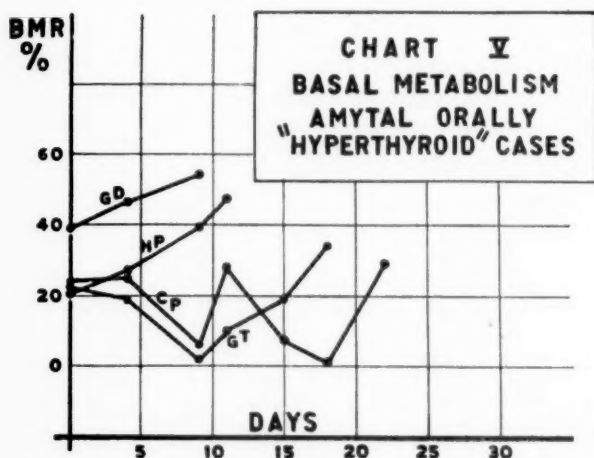


CHART V.—The effect on the basal metabolic rate of large doses of sodium amytal given by mouth to four patients in whom hyperthyroidism had been induced by the administration of large doses of thyroid extract. The results are variable although definite drop occurred for a short period in two cases.

content rose with the diminution in the metabolic rate, falling again when the metabolism increased. This agrees with the findings of Hurxthal⁶ who studied the blood cholesterol content in thyroid disease. In Case 1, the weight increased definitely when the basal metabolic rate diminished.

C. DISCUSSION.

I. EFFECT OF SODIUM AMYTAL ON CERTAIN CHEMICAL CONSTITUENTS CONCERNED IN INTRACRANIAL METABOLISM.

In previous studies,⁵ evidence was discussed for and against the consideration that the chemical changes taking place in the arterial and internal jugular venous blood represented indirectly the changes which took place in the metabolism of the brain. It

was inferred that although changes in the metabolites, especially dextrose and oxygen, might be due to changes in the velocity of blood-flow, it was more probable that they reflected changes in tissue metabolism. If this supposition be correct, the slight though definite diminution in brachial-jugular difference in oxygen content and the more marked difference in dextrose content might be

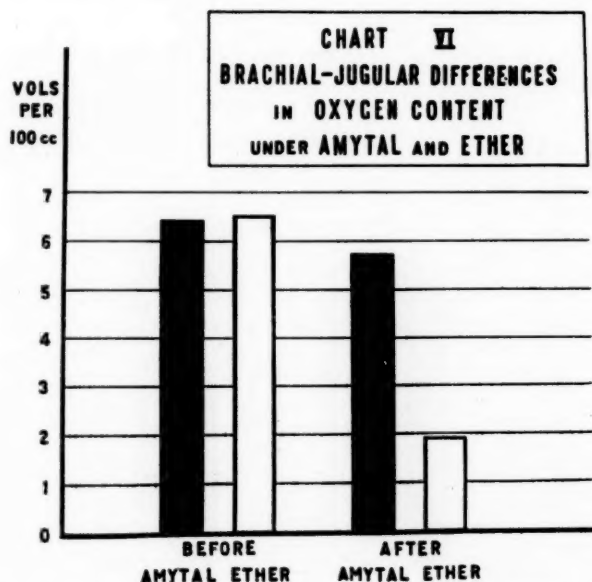


CHART VI.—The average differences in the arterio-venous contents of oxygen before and after the administration of sodium amytal intravenously and ether in large dosage. Note the striking diminution in oxygen "uptake" by the brain following the administration of ether, whereas only slight change occurred after sodium amytal had been given.

evidence of a somewhat diminished cerebral activity in the presence of the deep sleep of sodium amytal anesthesia. These rather slight changes in the above chemical constituents after the administration of sodium amytal may be compared with the much more marked changes occurring during deep ether anesthesia in a group of twelve cases. (Charts VI, VII).* The average difference in oxygen content between the brachial artery and the internal jugular

* A few of these cases have been mentioned in a previous study.^{5a} The rest of them will be detailed in another communication.

vein before ether administration was 6.5 volumes per 100 cc., after ether administration 1.9 volumes per 100 cc. The difference in dextrose content between the same vessels diminished from 12.5 mgs. to 7.7 mgs. despite the fact that the actual dextrose content of the various vessels rose rather markedly. These rather marked differences in the behavior of the above metabolites occurring after the administration of the two types of anesthetics may be compared with the clinical differences. Thus, the sleep of sodium amytal anesthesia, although sound, is not that of complete unconsciousness

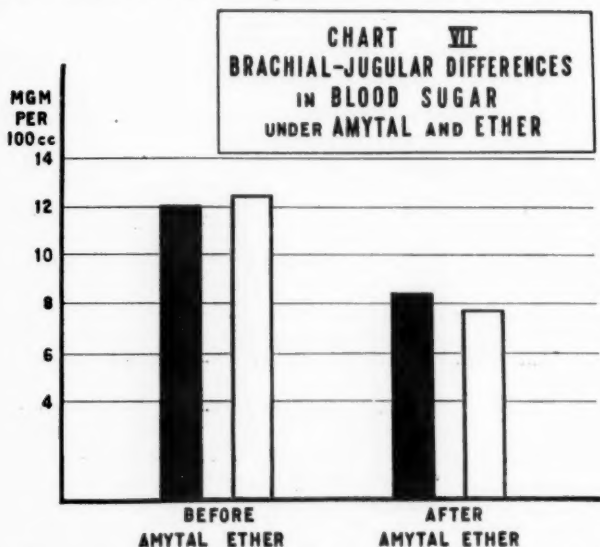


CHART VII.—The arterio-venous differences in dextrose following the administration of sodium amytal intravenously and ether in large dosage. The dextrose usage by the brain appeared to be reduced in both groups of cases, more so in those given ether.

since the patient responds to painful stimuli and the reflexes are not completely abolished. With deep ether anesthesia, on the other hand, the patient is completely unconscious, does not respond to any stimuli, and presents total abolition of all reflexes. It is possible, then, that the extreme drop in oxygen "uptake" which occurs during ether anesthesia may be due to an almost complete abolition of oxidative processes within the brain cells, whereas the slight drop occurring during amytal anesthesia may be due either to a less marked interference in these processes or to depression of a smaller area of brain tissue.

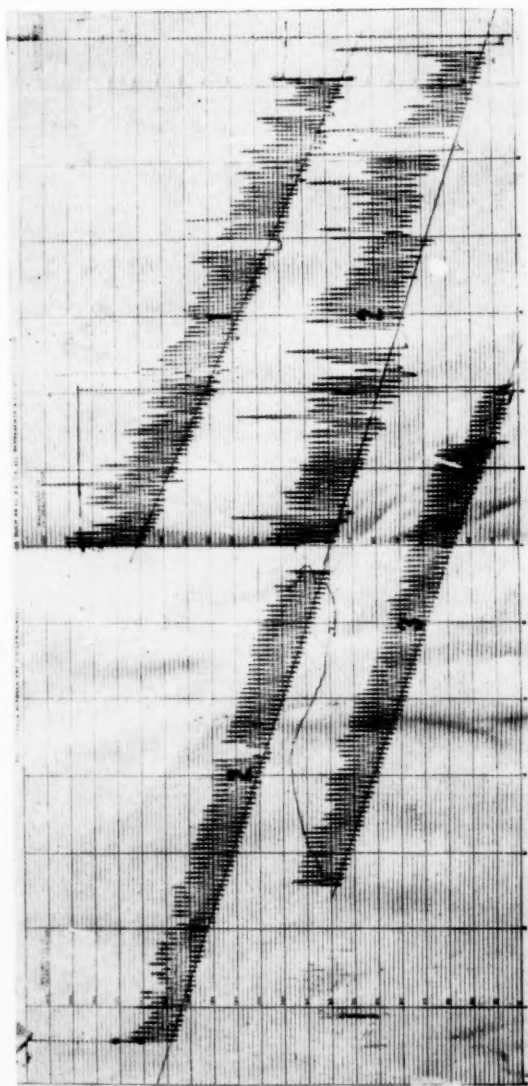


CHART VIII.—Reproduction of a typical basal metabolic determination before and after the administration of sodium amytal intravenously. Note that the curves marked 2 and 3 taken at $\frac{1}{2}$ hour and 1 hour respectively after administration of the drug are quite regular and show much less oxygen consumption during a given period than in the curve marked 1 representing the oxygen consumption before administration of the drug.

2. EFFECT OF SODIUM AMYTAL ON THE BASAL METABOLISM.

The profound effect of sodium amytal in large doses on the basal metabolic rate is unequivocal. Is this change due (1) to error in technique (2) to the effect of complete relaxation of the patient (3) to the effect of sleep or (4) to a specific anesthetic effect of sodium amytal?

It was felt that the possibility of error could be excluded since (1) there was no difficulty in making a determination during amytal anesthesia (2) the respiratory curves obtained were usually perfectly regular (irregular curves being discarded) (3) the results were strikingly consistent. It was also felt that complete relaxation of the patient could not be cited as explaining the marked drop in metabolic rate for the following reasons: (1) the patients were all "pedigreed," having become entirely used to the procedure and showing complete relaxation before the drug was given (2) sodium amytal did not appear to cause any lessening in muscular tonicity, in fact in some cases there was apparent increase (3) the pulse rate did not diminish following amytal administration (4) the concomitant fall in temperature after administration of the drug could certainly not have been due to relaxation, but was probably due to other factors to be cited.

Regarding the effect of sleep on the basal metabolic rate, the reports of studies made of this particular problem are somewhat conflicting. This may in part be due to the difficulty attendant upon making the test without awakening the subject. Benedict and Carpenter in 1910⁷ stated that "outside of the possibilities of more complete muscular relaxation and quietude, sleep of itself has no influence on metabolism." Benedict⁸ later modified this view upon finding that the basal metabolism during sleep became somewhat reduced (in a fasting subject). Pickworth⁹ concluded that the metabolism is slightly but definitely lower in sleeping than in waking subjects (differences in muscular tone and in attention?). Wang and Kern¹⁰ made much the same observations. Grollman,¹¹ in a critical review of the physiological factors during sleep, stated that "the sleeping state is not characterized by any particular diminution in the metabolism as compared to the waking state at the same hour of night." He felt that the various functions measured assumed lower values with night and rest, but not necessarily

with sleep. It may thus be stated that although authorities differ in regard to the extent of the effect of sleep on the metabolism, there is little doubt that slight diminution occurs. This may possibly be dependent upon complete relaxation of the subject. The extreme fall in the metabolism which occurs when amytal is administered is greater than can be explained by sleep alone and must therefore be due either (1) to the particular type of sleep induced by that drug or (2) to a combined effect resulting from sleep and the possible depression of certain brain centers.

The statement has been made that the action of sodium amytal is on the hypothalamic portion of the midbrain¹² where the sleep center is probably located.¹³ It is possible that in this area is also located the center for basal metabolism.¹⁴ It is interesting in this connection to note the experiments of Pick¹⁵ and von Economo¹⁶ who demonstrated that drugs of the barbituric acid series (veronal, luminal) produced sleep in decerebrate animals probably by a direct action on the thalamus and the brain stem. The speculation may be made that the profound effect of sodium amytal on the basal metabolic rate is due to a depressing effect on the hypothalamus with resultant effect on both sleep and metabolism. The variable effects noted when small intravenous and large oral doses of sodium amytal were given, may, to speculate further, be due to minimal effect on the hypothalamus, causing in some cases slight reduction in the metabolism, in some cases slight increase. This may be compared with the "stimulating" effect on the cerebral tissue of small doses of such drugs as alcohol, ether, etc., as compared to the markedly depressant effect of the same drugs when given in large doses.

The effect of sodium amytal on the elevated metabolic rate of experimental hyperthyroidism is particularly interesting. With large intravenous dosage, there was an extreme drop in the basal metabolism. This might argue for the use of the drug as a pre-operative measure in cases of hyperthyroidism. The definite though temporary drop in metabolic rate which occurred in two cases following the use of large doses of the drug given orally might have been due to a depressant effect on the hypothalamus which, in the presence of continued thyroid administration, failed to become permanent.

Mention may here be made of the few published studies dealing with the effect of the sedatives on the basal metabolic rate. Deuel, Chambers, and Milhorat¹⁷ found that intraperitoneal injections of amytal in doses of 50-75 mgs. per kilo produced a reduction in the oxygen consumption of dogs averaging 10 per cent. Anderson, Chen, and Leake¹⁸ in experiments with humans found that both amytal and phenobarbital increased the basal metabolic rate when given in small doses (up to 6 mgs./kilo), although in larger doses, the reverse was true. Sodium barbital usually lowered the basal rate. Siebert and Thurston¹⁹ found that the heat production of guinea pigs given 0.1 cc. of a saturated solution of potassium amytal subcutaneously became unchanged.

3. EFFECT ON THE BODY TEMPERATURE.

As noted above, there was a definite fall in the body temperature after the intravenous administration of the drug. This was most marked, averaging 1° F. when large doses were given. Small doses caused an average reduction of 0.6° F. Although the cause of this reduction is uncertain, it seems probable that it was due to the markedly diminished heat production (*i. e.*, lowered basal metabolism) which occurred when the drug was administered. It is to be sure possible that the drug has an effect on the temperature-regulating mechanism which may also be situated in the hypothalamus.²⁰ That the marked diminution in basal metabolic rate was not caused by the diminution in temperature is evidenced by the relatively slight drop in temperature as compared to the marked drop in the metabolism. DuBois²¹ has demonstrated that for each (centigrade) degree of rise in temperature, the basal metabolic rate rises 7.2 per cent. If comparison may be made with this basis in mind, the theoretical fall in metabolic rate with a drop of 1.0° F. (.55° C.) should have been only 4 per cent, whereas the actual fall averaged 26 per cent.

4. POSSIBLE PRACTICAL IMPLICATIONS.

The possible practical implications for the use of sodium amytal as a preoperative measure in hyperthyroidism have already been commented upon. A large dose intravenously may thus be useful as a preoperative anesthetic. Large doses given orally may be

useful in augmenting the action of Lugol's solution particularly on the nervous symptoms during the week or two before thyroidectomy is done. The almost immediate sleep induced by the drug given intravenously has already made its use popular in the handling of excited patients, as well as in convulsive states.²² That large doses given orally may reduce the metabolism suggests that some of the value of the drug when given to hyperactive individuals lies in its actual reduction of the basal metabolic rate. The variability of effect when 0.3 gm. three times daily is used suggests that in certain patients larger doses are necessary in order to ensure adequate sedation.

SUMMARY AND CONCLUSIONS.

1. Sodium amytal was given (a) intravenously in large doses (b) intravenously in small doses (c) orally in large doses to groups of "normal" subjects of an institution for the insane. The effects of the drug on the behavior, the reflexes, the pulse, the blood-pressure, the temperature, the basal metabolic rate, and the intracranial metabolism as measured by the arterio-venous (including internal jugular vein) contents of oxygen, carbon dioxide, and dextrose, were noted. In addition, the effects of the drug on a small group of patients with secondary or therapeutic hyperthyroidism were studied.

2. Large doses (1.0 gm.) of sodium amytal given intravenously caused deep sleep, fall in systolic blood-pressure, fall in temperature averaging 1° F., marked diminution in basal metabolic rate averaging 26 per cent, and slight though definite diminution in "uptake" of oxygen and dextrose by the brain.

3. Small doses (0.25 gm.) of sodium amytal given intravenously caused drowsiness, slight fall in systolic blood-pressure, slight fall in temperature averaging 0.6° F., and variable effect on the basal metabolic rate which usually became increased, at times diminished.

4. Large doses of sodium amytal given orally caused variable effects on the basal metabolic rate, at times diminishing it, at times increasing it. Given to four patients with therapeutic hyperthyroidism, definite though temporary reduction in basal metabolic rate occurred in two patients.

5. The effect of sodium amytal on the metabolism of the brain is discussed and compared with the much more marked effect of

ether given in large dosage. It is thought probable that both drugs caused a diminution in the oxidative processes of brain tissue, more marked in the profound anesthesia of ether than with the less profound sleep of amytal.

6. The striking effect of large doses of sodium amytal on the basal metabolism is discussed. It is concluded that the extreme diminution in basal rate was probably due to a combined effect of sleep and a more specific effect of the drug on brain (hypothalamic?) tissue.

7. The diminution in bodily temperature caused by the drug is discussed. It is thought to be due to the marked fall in heat production (metabolism) although the possibility of an effect on the heat regulating center can not be excluded.

8. Certain practical implications of these studies are discussed, chiefly the effect of large doses of sodium amytal on the metabolism of both normal and hyperthyroid patients.

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INSANITY IN ITS MEDICO-LEGAL RELATIONS TO SOME NOTABLE CRIMINAL AND CIVIL CASES.

TESTS OF RESPONSIBILITY.*

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The conflict between the medical and legal viewpoints as to responsibility, both criminally and civilly, still exists, notwithstanding the progressive efforts of The American Psychiatric Association and some advanced jurists to harmonize them.

We have, as in the recent Zangara case and in quite a number of other notable criminal cases, the flagrant inconsistency that the accused was medically insane but legally sane.

Among the explanations for this is the lack of knowledge of insanity as a defense for crime among jurors and our courts; and the additional reason that the courts have in mind chiefly the protection of society at large, and the physician or psychiatrist has in mind the interest and welfare of the individual. Further reference will be made to the difference between the legal and medical conceptions of insanity in a discussion of the rule that grew out of the McNaughton case.

As an observer of the conduct of Guiseppe Zangara at the time of his electrocution and as an official participant in the autopsy on his brain and body, I was impressed by the other official alienist's remark, "We have seen an insane man electrocuted." Yet this same alienist agreed with me that Zangara was legally sane, and, from that viewpoint, should have paid the death penalty for his premeditated, murderous acts, which resulted in his slaying of Mayor Cermak, of Chicago, and the wounding of several others of President-Elect Franklin D. Roosevelt's party at Miami, Florida, when Zangara attempted to kill President-Elect Roosevelt. Incidentally he did not aim to kill Mayor Cermak, but stated after the shooting that he was glad that he had wounded him, and that he

* Read at the eighty-ninth annual meeting of The American Psychiatric Association, Boston, Mass., May 29-June 2, 1933.

hoped Mayor Cermak would die from his wounds. Zangara pleaded guilty voluntarily and by advice of his counsel, to an indictment of murder in the first degree, for the killing of the mayor; and was, under the laws of the State of Florida and also under the common law electrocuted for first degree murder of a man he did not directly design nor conspire to kill.

This same medico-legal principle (medically insane but legally sane) was also involved in the cases of Guiteau who murdered President Garfield, and of Czolgosz who murdered President McKinley. An analysis of the medical history and evidence in each of these cases shows that Guiteau was rather a typical case of paranoia, and Czolgosz a case of constitutional psychopathic inferiority (paranoid), and that both had impelling delusions and homicidal tendencies, especially toward rulers or presidents.

In our opinion, Zangara was a paranoid manic-depressive case with delusions that capitalists and rulers were persecuting him and causing his constant stomach pains. In his case the ruler to whom his troubles were ascribed was President-Elect Roosevelt.

The autopsy showed an extensive adhesion of the gall bladder to the intestines, at the site of an old surgical operation for appendicitis; but the autopsy did not reveal any morphological abnormality or gross changes in his brain. The microscopic brain examination has not yet been completed.

In connection with the differences in the carrying out of the penalties in different states of the union for homicide, manslaughter and murder in the first degree, it is interesting to note that under the laws of the State of Florida, and also in accordance with common law, Zangara, though not aiming to kill Mayor Cermak, but to kill the then President-Elect Roosevelt, was electrocuted for killing Mayor Cermak, within a period of about one month after the crime was committed.

He was defended by reputable counsel, one of whom was of the same nationality as Zangara himself (Italian), who advised the accused to plead guilty, notwithstanding the report of the autopsy on Mayor Cermak by Drs. Meyer and Tice (made public after Zangara's electrocution) which stated that the cause of Mayor Cermak's death was *ulcerative colitis* and that death would probably have resulted from wounds like those inflicted by Zangara, in only about 50 per cent of such cases.

This report could, of course, have formed the basis of raising a reasonable doubt by his counsel as to whether the wounds caused the mayor's death, or whether death was not caused by contributory negligence of the attending surgeons, and might have been a successful defense in some jurisdictions.

In legal circles in Florida and elsewhere, there were criticisms as to whether all the constitutional guarantees were granted to Zangara; but public sentiment generally justified the summary proceedings and the speedy carrying out of the death penalty.

As to the tests of insanity or incompetency in criminal cases, in a legal sense, it is not sufficient to establish the presence of mental disease only, but it must be shown that this disease has resulted in changes in the manner of thinking, feeling and acting to such an extent that the accused did not know right from wrong, with regard to the particular act, at the time he committed it, or knowing right from wrong, was unable to resist the impulse to commit the act as charged in the indictment. If that were not the real test, in view of the many differing opinions as to the soundness or unsoundness of mind, the punishment of criminals would prove difficult, if not impossible. This leaves out any consideration as to the provocation, the enormity of the crime, or the barbarous manner in which it may have been committed.

The rule proclaimed in the *McNaughton* case has been the unquestioned law, not only of England, but is generally the accepted principle in the Courts of the United States most of which have inherited, as their basis, the common law of England. But in the *Hopps* case (*Hopps vs. People*, 37 Ill. 385 (1863)) in an endeavor of the court to have juries determine whether a given criminal act was the product of mental disease and admitting the principle of uncontrollable impulse, when due to disease of the mind, the court's opinion was as follows:

We have come to the conclusion that a safe and reasonable test, in all such cases, would be, that whenever it should appear from the evidence, that at the time of doing the act charged, the prisoner was not of sound mind, but affected with insanity, and such affection was the efficient cause of the act, and that he would not have done the act but for that affection, he ought to be acquitted. But this unsoundness of mind, or affection of insanity must be of such a degree as to create an uncontrollable impulse to do the act charged, by overriding the reason and judgment, and obliterating the sense

of right and wrong as to the particular act done, and depriving the accused of the power of choosing between them. (*Hopps vs. People*, 31 Ill., 385 (1863).)

The doctrine of irresistible impulse has little standing in our courts at the present time. (*People vs. Morisawa*, 180 Calif. 148), though it is recognized in the courts of several of the states of the union.

As a rule, the uncontrollable nature of the impulse depends on the statement of the accused, and is thus a self-serving declaration. The means employed, the thing accomplished, the prior, accompanying and subsequent acts, as set forth in the evidence, usually offset or establish any possible claim of irresistible impulse. An irresistible or uncontrollable impulse, to be of avail, must be such as results from mental disease, and not from natural passion. Passion or frenzy produced by anger or jealousy will not excuse a person from criminal responsibility for his acts. (*Guetig vs. State*, 66 Ind. 94; *State vs. Lauth*, 46 Ore. 342.)

It was held in the case of the State of Minnesota *vs. Shippey* (10 Minn. 223) that a person may be sane on every subject except one, yet if that particular one is casually related to the act or crime under legal investigation, and in reference to which the person cannot distinguish right from wrong, his defense is complete.

Criminal intent is an essential element of crime. If a person is mentally unable to form such intent he cannot be regarded as guilty under the law. (*Youtsey vs. U. S.* 97 Fed. 937; *U. S. vs. Lancaster*, 26 Fed. Case. No. 15555; *Marler vs. State* 67 Ala. 55; *Com. vs. Hathaway*, 13 Mass. 299.)

Since a crime includes both the act and the intent, and an unsound mind cannot form criminal intent, insanity is a complete answer to a criminal charge. (*Braswell vs. State*, 1 Ky. Law Rep. 285 (1880).)

Want of capacity is a complete defense and not merely a mitigating circumstance. (*Sage vs. State*, 91 Ind. 141; *Com. vs. Wireback*, 190 Pa. St. 138; *Com. vs. Hollinger*, 190 Pa. St. 155; *State vs. Maioni*, 78 N. J. L. 339.) Therefore, there is no insanity that will acquit of murder and permit the accused to stand convicted of manslaughter. (*U. S. vs. Lee*, 15 D. C. 489.)

What is criminal intent? The short definitions given in the law dictionaries are usually unsatisfactory. Thus a standard work

(Bouvier's Law Dictionary, 1 (1914), Criminal Intent, 730) defines criminal intent as "the intent to commit a crime; malice, as evidenced by a criminal act." There is no satisfactory short definition which would fit all cases. Some statutes attempt to define a crime as a joint operation of criminal act and intention, but this is obviously defective, for persons can be guilty of crime without committing any act in cases wherein the law imposes upon them the duty of action. There are also cases in which the law punishes as criminals those who perform certain acts regardless of their intention, *e. g.*, violation of the law prohibiting the changing of automobile license numbers, the adulteration of food, and the sale of cigarettes to minors, etc.

Intent or intention in a legal sense, means a purpose, design, resolve or determination of mind.

Tests of Responsibility.—The old test of Lord Hale, "the test of a child of fourteen years" and the "wild-beast" test as invoked in 1723 received the first severe setback in 1800, at the trial of Hadfield for shooting at the King in Drury Lane Theatre; and a distinct advance was made. The Attorney General as prosecutor made appeal to the old doctrine of total deprivation of memory and understanding as the only ground of exemption from punishment on the plea of insanity. Counsel for the defense, Lord Erskine maintained that the fixed insane delusions (of persecution) of the defendant were the direct cause of the attempted homicide and but for these delusions, the alleged crime would not have been committed. It was shown that Hadfield was sufficiently sane to attend to his business affairs in an efficient manner. By means of Lord Erskine's persuasive eloquence and the appeal to common sense rather than prevailing legal dogma, he won a verdict of acquittal for Hadfield. From this time on the wild-beast test was gradually abandoned. Thus the law changed considerably without formal acknowledgment of its change. The knowledge test at this time, that is the power of distinguishing right from wrong, was, however, not in relation to the particular act in question, but was *general, and applied to right from wrong in the abstract*. This was specifically set forth by Chief Justice Mansfield, in 1812, in the Bellingham case, when he stated that "if such a person were capable in other respects of distinguishing right from wrong, there was no excuse for any act of atrocity which he might commit as the result of delusion."

Thus the Hadfield case, with acquittal on the grounds of particular delusions, and the Bellingham case with *conviction and execution* on the basis of knowing right from wrong generally, without reference to the particular act in question, gave rise to two distinct lines of procedure in criminal trials, when insanity was invoked as a defense. These two theories of criminal responsibility were inconsistent and gave rise to endless confusion. There was no settled principle and no uniformity in English practice and this uncertainty obtained until the sensational revolution in 1843, occasioned by the McNaughton case. McNaughton shot Drummond to death, mistaking him for Sir Robert Peel and under the influence of a delusion that Sir Robert Peel was one of many persons who, so he believed, followed him everywhere, blasted his reputation and otherwise made his existence a torment. McNaughton had exhibited no obvious signs of insanity in his ordinary conduct and had capably transacted business before the homicide. He was acquitted, although he presumably knew right from wrong when he committed the act, and also knew the nature and consequences of his act.

The acquittal of McNaughton caused such a popular furore and clamor that the House of Lords propounded a set of questions to the trial judges. These questions referred to the law applied to insanity as a defense in criminal cases. The answers of the trial judges were exhaustive and became organized into law as a guide for the courts of England and have been applied since that time to the defense of insanity in criminal prosecutions. The gist of that symposium may be stated thus: To establish a defense on the ground of insanity, it must be clearly proved that at the time of committing the act the accused was laboring under such a defect of reason from disease of the mind as not to know the nature and quality of the act he was doing, or if he did know it, that he did not know he was doing what was wrong. (Maudsley, H.: Responsibility in Mental Disease, D. Appleton & Co., New York, 1876, p. 95.)

The question of abstract right and wrong was hereby laid aside, and the test was specifically applied to the particular act that made the accused a prisoner at bar; it was also limited to the time at which the act was committed. The decision also enunciated the principle that every man is presumed to be sane and to possess a sufficient degree of reason to be responsible for his crime until the contrary is proved to the satisfaction of the jury.

The rule thus proclaimed has been the unquestioned law of England and, generally speaking, the accepted principle of the courts of the United States (including the courts of New York State). But some jurisdictions of the United States soon began to take advanced ground. Under the English decisions the defense of irresistible impulse to do what is known to be morally wrong and what is legally a crime cannot be set up and it is held that "if the accused was conscious that the act was one which he ought not to do, and if the act was at the same time contrary to the law of the land, he is punishable." This tenet was held to be erroneous in some early cases in this country—in Indiana in the case of *Stevens vs. State*, 31 Ind. 485; in New Hampshire in the case of *State vs. Jones*, 50 N. H. 369. The early decisions in the United States manifested an effort to get away from the older and somewhat defective views of insanity and evidenced a desire to bring the law more into agreement with the results of medical observation. The endeavor of the courts was evidently to have juries determine whether a given criminal or civil act was the offspring or product of mental disease.

In wills, contracts and civil and criminal cases the fundamental legal principle is that a product of mental disease cannot become a contract, a deed, a will or a crime. Judge Doe well holds (*State vs. Pike*, 49 N. H. 399). "It is often difficult to determine whether an individual has a mental disease (in criminal and civil cases) but these difficulties arise from the nature of the facts to be investigated, and not from the law; they are practical difficulties to be solved by the jury, and not legal difficulties for the court." In other words, as Chief Justice Perley states—"Certain tests of mental disease are laid down by the court as a matter of law, but the application of any and all such tests is purely a matter of fact for the jury."

In this connection an interesting recent will case involving alleged incompetence and also bitter hatred and prejudice in a testator, but not constituting insanity or incompetency in a legal sense, is a Florida case in which a man named Hooper left a will cutting off from all participation in his estate his son who opposed the probate of the will on the ground that the testator was insane and incompetent at the time of executing the will.

The probate court sustained the will but the circuit court set it aside on the ground of insanity or incompetency of the testator, though the evidence established the fact that the testator had, and

had often expressed, the most bitter feeling and enmity against his son (but with some reason) both in his will and several years prior to making it. This bad feeling extended over many years, and there was conflicting evidence as to the sanity of the testator, but the Supreme Court of the State of Florida sustained the will and rendered an opinion stressing the principle that mere hatred, prejudice and bad feeling do not constitute insanity or incompetency, especially if based on some reasonable ground, as was the case here, and further stated that insanity or incompetency were not conclusively established.

This same principle was brought out in the noted Stephen Girard will case (the Girard College Case) affecting a large sum for the foundation of Girard College at Philadelphia, Pennsylvania.

Another will case of interest in this connection was that of a Mrs. Evans, who had been committed as insane to several New York State Hospitals and private sanatoria for insane, who had a long, clear history of insanity and marked enfeeblement of mind for many years prior to the time of executing her will in which she, a white woman left all her property to a negro man, cutting off her blood relations.

The proof of her incompetency, as established by counsel of the opponents of the will (the present Chief Justice of the U. S. Court, Supreme Court, Justice Charles Evans Hughes) through the testimony of medical experts and the hospital records, seemed conclusive—and her will was an unnatural one—yet the will was sustained, possibly on the ground that she had a lucid interval during which she executed the will, or possibly on the inconsistent ground that her relatives had neglected her during her life.

So called partial insanity (referred to in court decisions also as monomania, paranoia, etc.) is no excuse for crime unless it deprives the accused of the power to distinguish right from wrong and to choose between them in relation to the specific act charged. If he can so distinguish and so choose in regard to the act in question at bar, he is criminally responsible though he be insane on other subjects at the time. If a person has an insane delusion on a particular subject only, and commits a crime not connected with that particular delusion, his delusion is no defense. Neither eccentricities of conduct, oddities of dress and demeanor, hypochondria, nor loss of memory constitute *per se* an excuse for criminal acts.

The real question in a trial in which the defense is insanity is not whether the mind is unsound, but whether it is unsound to the extent of being unable to determine right from wrong, or whether, if able to do so, the accused was able to resist the impulse to commit the act, as charged in the indictment. If such were not the test, as already stated, with the many opinions which may be indulged with regard to the soundness or unsoundness of mind, the punishment of criminals would be rendered almost an impossibility. Usually in a case in which there is no other chance of escape from the enormity of a crime, insanity is put forward as a forlorn hope, and many persons indulge the conclusion that because a crime is committed from a motive which they may regard as insufficient to justify such an action, the action of the party arises from mental disease. Insanity is not, however, proved by evidence that the slayer entertained no known ill will, or by the enormity of the crime, or by the barbarous manner in which it was committed, or by the fact that there was no apparent provocation. (*Thomas vs. Com.*, 245 S. W. (Ky.) 164 1923.)

The accused need not know that the act he committed and for which he is placed on trial was legally wrong. It is the capacity to determine the moral quality of the act that determines his responsibility in a legal sense.

From the foregoing review of the British and American codes and a consideration of the codes of the various civilized countries, it is readily revealed to the student that the progress of medical science, especially psychiatry, has greatly modified the almost fetichistic worship of the legal criteria of criminal responsibility. The tests of insanity in our courts are becoming less and less mere legal formulas. Rather the tendency is more and more to consider the background and the mental condition of the person whose sanity or mental competency is in question. Formerly the law charged that the defendant was sane or insane according to the presence or absence of a particular symptom, *e. g.*, the knowledge of right or wrong in general. As a result of modern developments the tests of insanity are becoming more clearly matters of fact rather than matters of law. By this we mean that in each individual case, the true mental condition and the behavior reactions of the defendant at bar must afford the basis for determining responsibility.

Psychiatry and psychology have forced the administrators of law to become administrators of justice by compelling the courts to recognize the difference between him who will not and him who cannot fulfill the claims of the law. "That cannot be a fact in law which is not a fact in science; that cannot be health in law which is a real disease in fact." (*Boardman vs. Woodman*, 47 N. H., 150.)

We, as practical psychiatrists and teachers of medical jurisprudence, know how unsound some legal conclusions are, but it is certainly a hopeful sign that legal opinions are seeking and receiving more light from psychiatry and medical science, instead of holding to certain iron tests as our courts have done during many decades.

The tests of insanity in our courts, in cases involving responsibility for crime or mental incompetency in civil cases, are, with the progress of psychiatry and medico-legal science, and in consequence of the attitude of some advanced jurists, becoming more clearly matters of fact than of technicality and of law.

The difficulties and inconsistencies pointed out cannot be easily or quickly removed for several reasons, one of the most important of which is that as has been stated, psychiatrists and judges have different points of view.

Another weighty reason, most difficult of solution, is the fact that under our system of constitutional guarantees to the individual, he is entitled to a trial as to the question of fact whether insanity exists or not, by a jury of average laymen who cannot be expected to comprehend and appreciate the intricacies of responsibility in criminal and civil cases, where insanity or incompetence may be involved.

BLOOD PRESSURE AND PULSE RATE, THEIR RELATIONSHIP TO CONVULSIONS, AND THE FREQUENCY OF CONVULSIONS UNDER THE INFLUENCE OF OXYGEN INSUFFLATION IN CRYPTOGENIC CONVULSIVE STATES.

By J. NOTKIN, M. D., NEW YORK.

In a previous communication¹ we have reported the various clinical and laboratory changes that were observed under the influence of subcutaneous administration of oxygen in a group of seven patients with cryptogenic convulsive states. The object of this note is to report further the blood pressure and pulse rate variations in relation to the preceding or following convulsion during the period of the oxygen treatment and also the effect of this type of therapy on the frequency of convulsions.

Oxygen was insufflated subcutaneously in the thigh twice weekly. The first insufflation in each case was 500 cc., while all the subsequent ones were 1000 cc.

Five patients were treated for a period of four months, one five months and another one two months.

The patients were of the female sex and their ages ranged from 19 to 40 years.

In Chart I we have plotted in form of curves the systolic and diastolic blood pressures and also the pulse rates. The readings were made bi-weekly immediately before each administration of oxygen. The convulsions are marked in the curves with large black dots. In order to afford an easy reading of the chart only five curves of the blood pressures and four curves of the pulse rates were plotted.

An analysis of all the curves and especially of Curve No. 2 shows that there is little if any correlation between the time of occurrence of a convulsion and the direction of change in the blood pressure curve between any two consecutive readings. There were for instance seizures recorded in Curve No. 2 at a time when the patient's systolic blood pressure was stationary (120) as indicated by the same readings at two consecutive intervals. Often convulsions were noted at a period when the blood pressure was

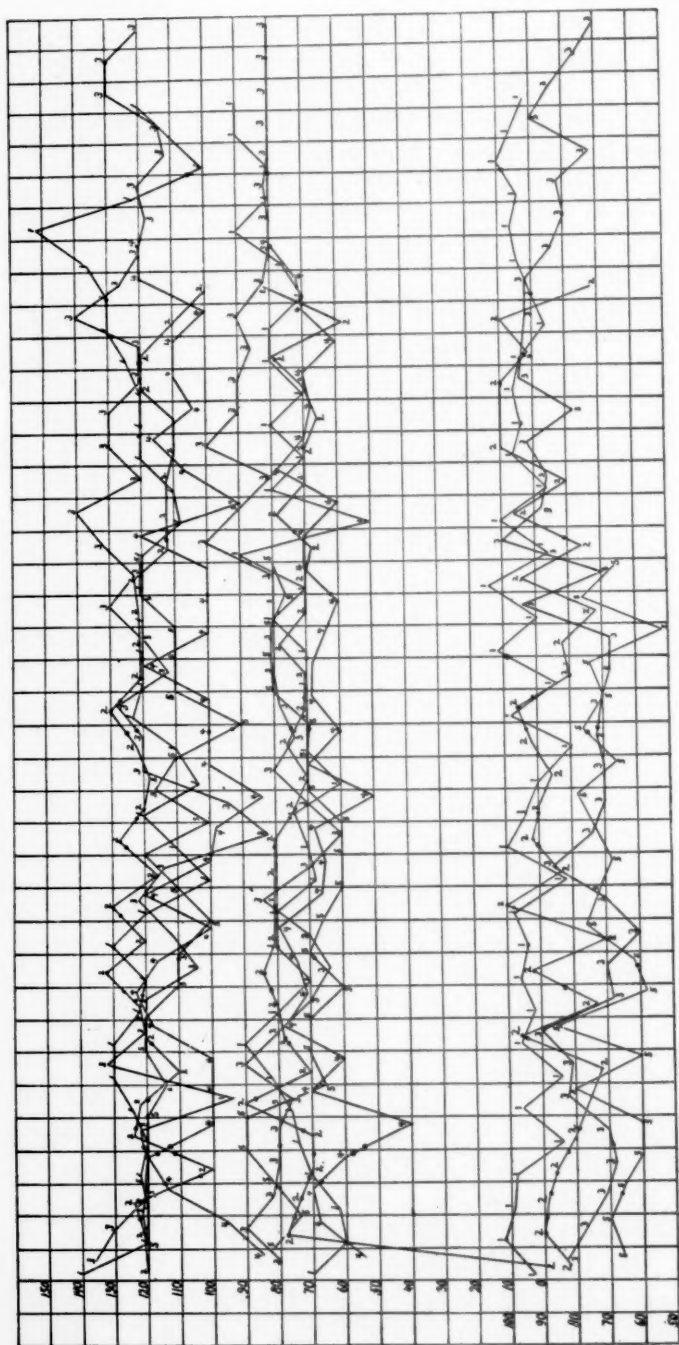


CHART I.

Upper Curves—Systolic Blood Pressures. Middle Curves—Diastolic Blood Pressures. Lower Curves—Pulse Rates.

higher at the time of the last reading than it was at the previous reading. At other times the last reading was lower than the one taken before the convulsion occurred. This holds true for both the systolic and diastolic pressures. It must be noted here that the changes in the diastolic pressure were greater than those in the systolic. The same thing can be said of the correlation that existed between the pulse rate and the convulsions. This is seen clearly from the lower curves.

As a rule the blood pressure readings in this group of seven patients ranged from 80 to 140 systolic. Changes observed were in both directions tending, however, more to a decrease. Pulse rates varied between 66 and 100. Fluctuation in both directions was also noted.

Blood pressure and pulse rate readings during convulsions or immediately after cessation of same or during intervals between convulsions were made in a large number of patients who were not subjected to oxygen therapy and the results obtained were reported previously.²

In Table 1 we give in column A the average monthly number of convulsions prior to the institution of the oxygen therapy. The

TABLE 1.

Case	A	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	..	1	1	2	2	0*	0*	0*
2	3*	..	9	8	4	4	0*	1*	1*
3	5†	..	3	0	1	0	1	0*	0*
4	2†	3	0	3	2	0*	2*	0*	0*
5	1†	..	..	1	2	2	1	1†	0†
6	5†	..	..	9	5	1*	1*	1*	0*
7	0*	..	4	3	3	2	1*	2*	0*

In the column A the average monthly number of convulsions prior to oxygen therapy is given.

* = Phenobarbital and bromide therapy.

† = No antispasmodic therapy.

Figures without asterisks indicate number of convulsions under oxygen therapy.

nature of the antispasmodic treatment during that period is indicated there. In the following columns we give the months and the monthly number of convulsions while under oxygen therapy and finally the frequency of convulsions after resumption of the antispasmodic treatment.

A study of this table shows that only in one case (No. 3) was there a decrease in the number of convulsions during the period

of oxygen therapy. In Case 2 there was a relatively high increase in the frequency of the attacks during the period of oxygen administration. When phenobarbital and bromide therapy was resumed in this patient in the month of October there was a decrease in the number of convulsions noted. Similar findings were observed in Case 6. In the other four cases there were slight changes in the frequency of convulsions in both directions. We do not feel, however, that the increase in the frequency of the attacks during the period of oxygen therapy should be attributed to the influence of oxygen. We are rather inclined to believe that the cessation of the antispasmodic treatment (Case 2) was responsible for the increase. This assumption can perhaps be substantiated by the fact that the patients who were not receiving antispasmodic therapy prior to the period of oxygen therapy showed no substantial change in the frequency of attacks (Cases 4 and 5). Furthermore the same patients responded with a decrease in the number of seizures when they were put on a régime of bromide and phenobarbital immediately after the discontinuation of oxygen therapy.

CONCLUSIONS.

1. Oxygen was insufflated subcutaneously in large volumes in a group of seven patients with cryptogenic convulsive states.
2. There was little if any correlation between the time of occurrence of a convulsion and the direction of change of blood pressure and pulse rate curves between any two consecutive readings.
3. Oxygen when given subcutaneously does not exert any appreciable influence on the frequency of the convulsive attacks.

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THE ATROPINE TREATMENT OF THE POST-ENCEPHALITIC PARKINSONIAN SYNDROME.*

BY FELIX M. ADAMS, M. D., AND POWELL L. HAYS, M. D.,
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Based on the findings of Bremer, of the hyposensitiveness to atropine of patients with the parkinsonian syndrome following encephalitis lethargica, successful experiments with large doses of this drug have been carried out in the sanitarium of Dr. Romer of Hirsau. Thirty-five patients were given treatment, 29 having been incapacitated for work and 18 in need of personal care. At the end of the treatment 23 were able to work and all were able to care for themselves. Rigidity was improved in 35 per cent of cases and removed in 60 per cent; tremor was favorably influenced in 89 per cent and in 53 per cent abolished; gait and speech disturbances were markedly improved and in many cases disappeared.

Stemplinger,¹ within a year subjected 26 cases of parkinsonianism to the atropine treatment and reports as a result that 43 per cent were fully capacitated for work and in good condition, 36 per cent were greatly improved and capacitated for light work, and further improvement is expected in the course of a few months. In three cases the results were less marked on account of poor physical condition and psychic defects in the patients.

The treatment recommended by Stemplinger consisted in giving one drop of a .5 of 1 per cent solution of atropine sulphate three times a day, the dose being increased one drop a day until the desired dose is reached.

In February, 1931, 21 cases in the Eastern Oklahoma Hospital were placed on the above treatment with most gratifying results. A few were given doses up to 21 minims three times a day, but most cases were found to show marked improvement while taking from 10 to 18 minims.

* Read at the eighty-ninth annual meeting of The American Psychiatric Association, Boston, Mass., May 29-June 2, 1933.

Stemplinger reported that occasionally nausea and vomiting occurred about the sixth or seventh day but that by decreasing the dose by two or three minims the symptoms disappeared even in cases receiving as much as 21 minims three times a day; further that a number of cases had taken 35 minims three times a day for months without toxic symptoms. For some unexplained reasons our cases could not take such large doses. In about 80 per cent of the patients treated by us, toxic symptoms occurred between the seventh and twelfth day. These symptoms were nausea, vomiting, paralysis of the abdomen and bladder, and in three cases, delirium. As soon as these symptoms occurred the atropine was withdrawn and the paralysis disappeared in about 24 hours.

During the past year we have modified the dosage and have overcome the above symptoms. Using a .5 of 1 per cent solution of atropine sulphate, we began with 1 minim of the solution, three times a day, increasing each dose 1 minim daily until the fourth day, continuing the 4 minim doses for three days and again increasing as described until the tenth day when 8 minim doses are given for three days. On the thirteenth day the dose is continued at the rate of increase of 1 minim a day until the optimal dose is established; this is usually between 12 and 18 minims given three times a day.

Each case must be studied to determine the correct dosage—the quantity which just suffices to produce and to maintain physical and psychic euphoria. One first determines the size dose which no longer produces a noticeable improvement then decreases the dose 1 minim each day until the parkinsonian symptoms become more pronounced. The optimal dose is usually midway between these two points.

The atropine effect is more noticeable during the first ten days of the treatment. The gait becomes more free, the posture more erect, the mask-like appearance of the face relaxes and the eyes are no longer so staring. The patients are soon able to feed and dress themselves and comb their hair, something many have not been able to do for years.

The results obtained in 35 patients treated in this institution and in 35 additional private cases, are as follows: rigidity was practically removed in 35 per cent of cases and greatly improved in 50 per cent; tremor was practically abolished in 50 per cent and

greatly improved in 35 per cent; gait and speech disturbance were remarkably improved in 95 per cent; oculogyric spasms, one of the most distressing symptoms, controlled in nearly all cases; improvement is recorded in the physical condition of 90 per cent of the patients.

After the optimal dose is established the patient may be fitted with proper glasses to overcome the marked dilation of the pupils and be able to take the atropine indefinitely without bad results.

Anyone who has seen these helpless, vegetative invalids awakened by this treatment from a stupor of 10 to 20 years, again becoming men and women with a certain amount of vigor, joy in life and pleasure in work and play, will be convinced of the great advantages of this treatment over all others. A large percentage of the cases may be restored to a useful life by carrying on the treatment in their homes.

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PSYCHIC DISTURBANCES AFTER HEAD INJURIES.*

By PAUL SCHILDER, M. D., PH. D.,

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The symptomatology of head injuries has been studied more carefully from a neurological than from a psychiatric point of view. (For instance, the paper by Glaser and Shafer.) At the last meeting of the American Neurological Association, Strauss and Savitzky spoke of the neurological side of this question and Eckel and Winkelman of the histopathology. Since the important paper by Adolf Meyer, no detailed study of psychosis after head injuries has appeared in the English language. In the German literature, the papers by Berger and Pfeifer contain important material.

The following study is based on 35 selected cases of head injuries which I have observed in the psychiatric ward of Bellevue Hospital. Only serious head injuries have been considered. The acute phases have been the special object of my attention. The chronic sequelæ are merely considered for comparison. The number of cases which have been observed is, of course, much larger. The study has no statistical purpose, and is chiefly concerned with the question of symptomatology and psycho-physiological mechanisms.

Augustin R., 34 years old, of Italian extraction, was struck on the occipital region with a blunt instrument on March 22. He was found in a stuporous condition. It is not known how long the unconsciousness lasted. After awakening he was resistive and delirious. At admission he complained of headache. When urged to speak he replied: "This is the carabinieri department; I can't tell you the day; this is Mac Kee." His temperature was 104 and his pulse a little accelerated. The X-ray examination of the skull was negative. The spinal fluid was bloody, and contained crenated cells. The thyroid was enlarged, and there was a slight exophthalmos. There was rigidity of the neck and slight resistance against passive movements. The tongue deviated

* Studies from the research department of Bellevue Psychiatric Hospital, New York City.

Read at the eighty-ninth annual meeting of The American Psychiatric Association, Boston, Massachusetts, May 29-June 2, 1933.

to the right. On the left side there was a Babinski and an Oppenheim reflex. There were no other neurological signs. The skull, especially in the occipital region, was sensitive. In the next few days the temperature subsided. The patient remained confused and bewildered. He was rather torpid and did not talk spontaneously. There was bladder incontinence. On April 22 he showed fundamentally the same picture. He appeared bewildered, and had to be prompted to speak. He complained about headache. "Maybe I got a cold. I was in my house before I came here. I am here two or three weeks. We are going to pay. We shall not do anything about it." He knew his address but did not know the date. He recognized simple pictures when they were exposed for a sufficiently long time. A series of pictures were shown to him tachistoscopically. These were the pictures which Ross and Schilder have shown to normals and comprise the Binet-Simon incomplete human figures. In addition to these, there was a picture of a boy with one leg missing, a boy with one arm missing, a picture of a woman with one breast missing, a female figure with three arms, and a female head with three eyes. Whereas the normal person recognized these pictures mostly correctly, when the time of exposure was below $1/25$ of a second, the patient said, when the Binet face without nose was exposed $\frac{1}{2}$ of a second: "Is like light; like A.B.C.; I see but they go out; I see a picture, just like a boy." Two repetitions provoked the same answers. At the time of exposure of $\frac{1}{2}$ a second, he said: "She has only one eye." This is an answer which one gets from normals when the exposure is very short. They then transpose the defectiveness from one part of a picture to another part. In his answer to the subsequent exposures, he made, in an exposure time of $\frac{1}{2}$ of a second, the same mistakes that normals make at much shorter exposure time. When a boy was shown whose right arm was missing, he said, after three exposures: "That is the same boy with the leg (boy with one leg only had been shown before). He is just standing up; the legs and the arms are good this time." He expressly stated that he had two arms and two legs. He persisted in the description when the picture was shown for 1 second, and imitated even the posture of both arms, imagining the missing arm in the same position as the one present. When he looked at the picture in a prolonged exposure, he finally said: "He has only one arm." When the picture of the woman with three arms was shown to him, he made grave mistakes in the exposures of $\frac{1}{2}$, $\frac{1}{2}$ and 1 second. When the picture was finally shown to him, he still said: "She has two arms"; making in this lengthened exposure the same mistake the normal makes in shorter tachistoscopic exposure. When asked again, a few minutes later, about the picture, without a new exposure, he said: "It was a naked girl picture. She had three arms."

Summing up, we may say that he had difficulties in tachistoscopic perceptions, even of those pictures which he could recognize otherwise. In complicated pictures he made the same mistakes that the normal makes in tachistoscopic exposure. On the same day he was given the gestalt tests, which have been introduced into psychiatry by L. Bender (Fig. 1).

The figures to the left show the gestalt test forms which the patient has had to copy. The figures in the middle show his reaction at the height of his

confusion. The figures at the right show his performance at the time when the confusion was improving. At the height of the confusion the patient changed rectangular figures very often into circles or ellipses. (Fig. A, 7, 8.) Points were changed into short lines (1, 3, 5). The direction was changed (Fig. 2). Angles were changed into straight lines (Fig. 3). Gestalt principles come out in a very primitive and almost exaggerated way (Fig. A, 3, 7, 8). In Fig. A, the patient emphasized the gestalt principle in a primitive way by connecting the two figures with a line. Perseveration is seen in Fig. 2. The gestalt principle was overlooked (Fig. 4). With the improvement the change in the direction was still present (Fig. 2, 3), the gestalten were simplified (Fig. 4, 8). The patient drew the figure of a man in a very primitive way.

Wertheimer has shown that the figures reproduced are not seen as senseless arrangements of details, but as characteristic gestalt forms. There are no irregular dots, but a series of triplets. Another figure is seen as half of a circle with an elongation, and not in any other way. All of the figures reproduced are typical gestalt figures which are perceived as such. Bender has shown that one gets valuable information if one orders persons with mental deficiency or schizophrenia to copy these gestalt tests. Very often the gestalten figures are not reproduced as such or the forms laid down to a lower level. Figs. 2 and 3 show the way in which our patient copied the gestalt tests. He substituted short lines for points. Angular figures took the shape of circles or ellipses. Angles became straight lines. Simple gestalt principles may become exaggerated. In other instances the gestalt principles were overlooked. The motor execution was clumsy and awkward. One may generally say that the optico-motor gestalt patterns have gone down to a very primitive level and in this elementary sphere, we find disturbances which must deeply impair the primitive basis of orientation. On the 28th of April the patient showed qualitatively the same picture, but he had improved so much that an extensive psychometric and memory test could be given. The following results were obtained: Memory: Answers were given to all personal questions but the reliability of responses could not be checked. The current information was very inferior. He gave the King of Italy's name, but called Hoover the President. He varied in replies to questions of school information. The score was 50 per cent of the normal. In repeating the alphabet he rushed through, omitting several letters. In counting numbers backwards (20 to 1), he repeated several numbers, but responded accurately in 39 seconds (normal 9 seconds). In rote memory of digits he gave 4 forwards and 3 backwards (4-7 year performance). His rote memory of logical material was below 6 years and in his logical memory for long passages he made no score at all. His identification of objects was correct. He was able to describe pictures at the 7 year level, but could not interpret their meaning adequately. Visual attention was about five years or less on Knox cubes. On army designs his score was zero. In formation of new associations there was much confusion, and he made a gross score of 13. Perseveration was marked. In reading, he read below at the level of 10 years in 52 seconds, making five errors and afterwards could remember nothing of what he had

read. He was disoriented, claiming he was in the city hall and gave the wrong date. In perception tests, he perceived data, but could not synthesize. His emotional reactions were dulled. He was agreeable and uncomplaining, and his facial expression was of a vacant stare. There was no insight into his failures in the tests. In the memory test of Wells, he attained a score of 45 per cent; with the Pintner Patterson he scored at the level of five years. In the tests with the mare and foal, manikin, ship, and with the Knox cubes his score was that of five years. His copying of the diamond resembled an elliptical outline. In a re-test on the 9th of May, there was no improvement except that the confusion was diminished. In the Goodenough tests (drawing the figure of a man), he made the score of six years. In the gestalt tests there was a marked improvement. Since then and up to the present time there has been no further improvement.

This observation represented a typical picture of the confusion which follows a severe head injury. It was a real confusion of the organic type, characterized by an inability in the perceptive sphere and an inability to coordinate the data of perceptual experience. The tachistoscopic examination allows the conclusion that the perceptive processes were slow and incomplete. The gestalt test, ship test, manikin test, showed the difficulty in coordinating parts into a whole, in developing the simple and primitive gestalt into definite structures and giving them the final direction. A similar basic disturbance exists in the memory. The disorientation was basically due to the difficulties in the perception and gestalt functions, but beyond these we have a deep disturbance in the emotional attitude which we cannot measure.

These investigations are not concerned with the neurological picture. But it is worthwhile mentioning that the period of unconsciousness is very often followed by a period in which a negativistic resistance is coupled with varying muscular tensions. It seems that the deep clouding of the consciousness is coupled with a negativistic attitude, which is psychic as well as neuro-muscular. It is remarkable that the serious trauma did not find any psychic representation. The patient did not know anything about his head injury, and blamed his headache on a cold.

More complicated from a pathogenetic point of view is the following observation:

Thomas R., 46 years of age, was admitted to another hospital on April 10. He had been found unconscious on the street. After his admission he had an epileptic convulsion. On the 11th he showed a left facial weakness and a Babinski on the right side. There was blood in the spinal fluid and fissure

fracture of the squamous portion of the right temporal bone, the line of fracture extending for a distance of three and one-half inches. The temperature in the first three days went up to 104° . At admission to Bellevue Hospital he was restless and confused. His orientation was poor. There was ecchymosis of the left eye and old blood in his right ear. Another epileptic seizure had occurred. At admission he had a temperature of 106, respiration 32, blood pressure 100/70. According to the relatives, he had drunk steadily for the last three months. On April 22 he said "I am 32 years old. In the paper I am 45, but I am a little over 32. I will be 33 on the 4th of July. Yes, I was doing some drinking lately. Yes, I was in the army. I did not get enlisted. This place belongs to the City of New York. I do not want to put myself in the wrong. I know one way, I do not know the other. I really don't think anything is the matter with my leg. (One leg of the patient had been amputated.) This doctor was talking to me this morning (incorrect). This is a club. I just don't know exactly the name of it. I got in here before. Yes, occasionally I have fits. I have them more when I am not eating correctly." On April 25 and 26 he was still disoriented, but did not show any signs of confusion. He said he fell on his head ten days ago; that he was unconscious for not more than ten days. Later he said that he was in the hospital three days. He made contradictory statements concerning the accident. The psychological examination showed the following results: In his vocabulary he scored at the 14 year old level. In the manikin and the ship tests he scored 9 years 1 month; the profile test 9 years 5 months; Knox cubes 7 years and the army design test 6 years 9 months. In Wells memory test he obtained a quotient of 67. He reproduced the marble statue test with only slight relevancy. The analysis of these tests showed a vocabulary score of low average intelligence. His present level of functioning is still lower. This is chiefly due to the disturbance in all phases of orientation and his memory disorder. His score of personal information was 34 per cent; in new associations 40 per cent; in digits backwards 40 per cent; in Knox cubes 50 per cent; in army design 50 per cent; in alphabet and counting (20 to 1) 58 per cent; in current and school information 76 per cent; in manikin, ship and profile tests 70 per cent; in digits forwards 100 per cent; in identification of objects and memory for sentences 100 per cent. There was a marked perseveration of mental and motor acts. His comprehension was slow and adjustment to a shift of ideas was even slower. He could easily be encouraged to confabulate, and was only vaguely oriented as to time. He was consistently amiable and cooperative. In a re-test on the 10th of May he showed a marked improvement in orientation and in memory function. Visual test scores involving attention were still low although higher than before. Logical memory for a long passage was poor and rote memory for digits backwards was much impaired. Gestalt tests and tachistoscopic tests were given April 23 and proved completely normal.

This case is not quite so clear from an etiological point of view. Epilepsy and alcoholism complicated the picture, but the patient had no psychosis before, and his serious head injury is proven by

the X-rays and the blood in the spinal fluid. The head injury was probably the leading etiological factor, although the alcoholism may have been a contributing factor in the final elaboration of the picture, especially as it concerned the mood and the emotional attitude of the patient. But the psychosis as a whole is a post-traumatic psychosis. The patient seemingly had only a short confusional state which was followed by a state of clearness with predominant memory disturbances. There were no difficulties in perception and none in the gestalt functions and visual-motor patterns. The disorder was that of a rather clear-cut Korsakoff picture. In the German literature (Buerger-Prinz and Matta Kaila) the tendency exists to doubt the possibility of memory disturbances without perceptual difficulty. This observation shows that these doubts are not fully justified. Stoerring has taken a similar point of view. Memory, perceptive function and gestalt function are in a large degree independent from each other. Also, logical reasoning was certainly less impaired in our patient than memory, although one hardly ever misses defects in judgment in Korsakoff cases concerning their confabulatory material (Pick, Gruenthal, Hartmann and Schilder). We draw, at any rate, the conclusion that a head injury can be followed by the Korsakoff picture without perceptive difficulties. I have observed identical pictures following head injuries without the complication of epilepsy and alcoholism. The Korsakoff psychosis is, according to Schroeder and Pfeifer, an almost regular occurrence in psychosis after head injury.

The following case shows a very similar problem:

Albert G., 44 years old, was found unconscious on September 24, 1932. There was a fracture through the occipital bone extending to a distance of three inches and a fracture in the left parietal bone. The bones were not depressed nor was the intracranial pressure increased. The spinal fluid was bloody in all tubes. There was a fresh hemorrhage in the right fundus. The upper lip was lacerated and blood came from the mouth. Babinski was present on the left side. He complained of severe headache and was dull. During the next days he was restless, noisy and resistive. On October 3, he said, "it is a railroad hospital. I am here one day and a half because of a cold. Yesterday I was in Reading." He gave the date as October, 1932. He did not know that there was a fracture of his skull, and forgot about this half an hour after he had been told. On October 5, he remembered all that had occurred at the time of the injury. He related that he had been hit by an automobile, with a friend who was injured. The two of them started to chase the automobile, but could not get it. Then he went home. His wife called the doctor,

and he was brought to the hospital. He repeated the shark story in the following way: "Jones Smith, the son of a minister, heard the voice of God. I was once in a sailing vessel. The son of a minister, the voice of God." On October 16 he repeated the shark story with only slight mistakes. Psychological tests showed that his comprehension score was 6; information 13, which was about the average. In Wells memory test he scored 62 per cent. He improved in comprehension and memory in the course of the next day, but would sometimes confuse elementary facts. The rote memory for digits was poor. On October 19 he said, "I feel fine today. I am 27 days in the hospital. They picked me up on the street." He then gave seemingly reliable details about the way he was run over. There was a history of mild alcoholism.

Confabulations do not parallel the defectiveness of memory. It is a point of interest that this patient showed after a while some knowledge of the accident, but he distorted this in a confabulatory way. In this he became the active hero. When he was near complete recovery, he finally remembered the accident. The patient of Hartmann's and Schilder's reacted in a similar way following severe head injury.

The following case shows the independence of confabulations and memory disturbances:

J. T., 59 years of age, was, on March 4, found unconscious on his doorstep. The scalp was lacerated, and the spinal fluid was uniformly bloody. On March 5, he said, "I came from New York—you say I came in an ambulance. My head hurts. I don't know what happened to me. I guess I got hit somewhere, but I don't know where." He was poorly oriented for time. The pupils reacted sluggishly to light, and there was bilateral Babinski. On March 11, he said: "I was out yesterday. I went down town to see my boss. I want fresh air." On the 15th he said, "I have seen you before somewhere. I can't hear because of an accident. On the back of a truck something fell on my head. I was out one night. I was working when I came back here. I am sixty-four years old." He repeated the shark story correctly. On the 17th of March he said: "I am here one day. I was out for a walk twice." In the tachistoscopic examination he needed longer exposures than the normal, but his descriptions were generally accurate. Only when the woman without a nose was exposed 1/25 of a second, he first said: "I don't think she got a mouth," and later on, "she just got a bit of a nose." The shark story was still well remembered. In the following days he gave an accurate description of the accident. He was unloading a truck and a box fell on his head. But there was no possibility of checking the truth of this. The Babinski reflex was still present. He still continued telling that he had been out and saw his boss, worked, etc. In the Wells memory test he scored 110; the repetition of the marble statue story showed a low average; his score in the ship test was 14; in the army design 17 years 6 months. On the 6th of April he still repeated his confabulations but accepted corrections and retained from then on full insight. There was a

history of alcoholism in this case. His confabulations were probably connected with a head injury. The confabulations persisted at the time when the memory was intact.

The following case shows in some way a minimum psychic disturbance consisting of a persistent amnesia for the time before the accident:

Betty C. O., 20 years old, was admitted on June 19, after she had been knocked down by a backing taxicab. It is not known whether she was unconscious. She had a fissure fracture through the right parietal bone, and another line extended into the squamous portion of the temporal bone and from there into the base. There was blood in the spinal fluid. Babinski was present on the left side. She gave a wrong address and at first said she was 14 years of age. The next day she was fully oriented but uncooperative and said; "I felt sick all day long. I want to go to sleep." She did not know how she came to the hospital or what had happened, and complained about headache. There was no insight. On the following day an attempt was made to bring back her memory. She remembered that she left the store where she worked in order to get a bathing suit. She did not know how far she went or where the accident happened. Her remembrance ended abruptly at the time when she left the store. In the following days and weeks repeated attempts were made to bring back her memory. Suggestion was used and hypnosis was tried, but it was not possible to bring her into a deep state of somnolence. Even medinal did not help in the hypnotic attempts. When the patient left on July 11, the amnesia still persisted. She had never taken alcoholic drinks.

The case histories reported so far give us insight into the two fundamental symptoms which occur after head injury. The clouding of the consciousness with confusion and the memory disturbances. Clouding of the consciousness has always been observed in the cases which came to the psychiatric wards. There is primarily the state of unconsciousness. Our data about its duration are incomplete. In many of our cases it changed into a state of deep clouding with restlessness and attitudes of resistiveness which were partially psychic, but also had an organic component. When the patient could be made to speak there was clouding of the consciousness and disorientation in space and time. This state is hardly ever missed completely, it may last a long time as in the first case described. When this state lasts longer, a deep bewilderment and helplessness may be present. Tachistoscopic examination shows that the patient needs a long time to come to any perception. The perceptive function as such is retarded. Besides the retardation in the perceptive function, there exists a difficulty in the synthesis of primitive

impressions into a unit. Complicated pictures are not at all understood. There is a deep going basic disturbance in the gestalt functions. Visual motor gestalt patterns show a very primitive structure. Points are distorted into short lines. Angles are straightened out. Diamonds are turned into elliptoid figures. There is an inability to use the right directions. The gestalt principles may be exaggerated in a primitive way. The gestalt may be degraded to a primitive level or the gestalt principle may be overlooked completely. The perception and the gestalt difficulties certainly contribute to the disorientation and are basic for the helplessness and for the confusion. They may improve gradually. In many of the cases reported here, the stage of confusion subsided quickly. The perceptive difficulties and disturbances in the gestalt functions are then only present in a minor degree and may finally be completely absent. The difficulties in the performance tests, in the ship tests, in the manikin tests, generally go parallel to the gestalt tests and the tachistoscopic tests which allow a deeper analysis of the disturbance. During the confusional state, memory and judgment are impaired. But impairment of the memory, especially for the recent events, is more outspoken. When the perception and gestalt function disturbances subside, the picture of a Korsakoff psychosis remains, which comes out especially in the second case reported here. The perceptive and gestalt disturbances can then be completely absent. The confabulatory element does not go parallel to the memory disturbance and may even be present when the memory has come back to normal. Although in some of the reported cases alcoholism was a complicating factor, alcoholism is in no way a necessary factor in the genesis of the traumatic Korsakoff. In all of the cases reported, there is a particular amnesia concerning the accident as well in the confusional state as in the Korsakoff state. The amnesia can be complete, later on there may exist a vague knowledge concerning the accident, partially based on reports of others. But this knowledge is very often distorted in a confabulatory way. In some cases also this part of the amnesia may clear up; in others the amnesia is persistent. The amnesia for the accident may be the only lasting psychic symptom. The resistiveness of the amnesia, its persistence, contrast it to hysterical amnesias and also to amnesias which are merely due to alcoholic intoxications. The return of the memory of the accident very often occurs through a confabulatory stage. Whereas the con-

fusional state is characterized by the mood of helplessness and bewilderment, the Korsakoff state very often shows the mood of serenity and mild euphoria, in spite of the persistent headaches. Irritability was present in the last case reported. It is astonishing how little the patients are concerned about their head injuries. They do not appear in dreams. It is another outstanding part of this confusional state and that of Korsakoff psychosis that the psychic material which appears in these is rather impersonal. In the average case comparatively little of the previous personality appears in the psychosis. It is as if an impersonal province of the psyche was affected.

Although the foregoing descriptions give an adequate picture of the majority of cases they are in no way complete and do not cover all the possibilities. There sometimes occur changes in the mood as in the following case:

Rose F., 40 years old, was admitted November 8, 1931, and discharged December 11, 1931. She was brought from the Fordham Hospital with a history that she had walked out into a dark road in front of an automobile. She received abrasions of the right forehead, buttock and knee. The spinal fluid was bloody. The X-ray was negative, as was the Wassermann in the blood and spinal fluid. She was at first resistive and restless. On the 9th she stated: "My name is Rose de Franco and my mother's name is Amelia. No, I don't live on Third Avenue. I am 39 years old. I felt sick. I came here myself. This is Fordham Hospital. I am sick about six months. I have pain in my chest. I have neuralgia. My head aches. I had trouble with my mother." The day she said was "October" and when asked the year she remarked, "Can't you look up on the calendar?" The patient was depressed, complaining, confused and disoriented. She was unable to give any reliable information about herself. The pupils reacted sluggishly to light. She said: "It was an accident, about a week ago, I don't remember when. It was on Fordham Road. Henry wanted me to work. They took my wages. Maybe it was in church. I said a prayer. Finally I found myself in a hospital. No, I'm not working. That's the trouble, I am not working. I told them I was going to see my boss, instead of going to 21st Street. They know I was working at brassiers, they wanted me to press." She rambled in her description of her previous occupation. She knew it was now November, 1931, and that she was in Bellevue. "I don't know how I got hit. My mind is like a blank. I know it was on Fordham Road."

On November 16, 1931, she was very restless, threw herself about and seemed sort of frantic, not knowing what to do with herself. Her speech was rambling, disconnected, apparently involving numerous personal difficulties which had preceded her injury. She had no clear memory of the accident itself. She was emotional and showed a patchy amnesia. The left

pupil was larger than the right. On November 20, 1931, she said: "I still feel dizzy. I was born in 1890. I am 40. This is 1900. I do not see double." There was a slight weakness of the right 6th nerve. There was a tendency to sinking of the left arm and flexion of the left elbow. The fingers were hyperextended and the little finger abducted.

On December 1, 1931, she was still very much mixed up though she gave the proper date and said correctly that she had been here three weeks. She said she felt better, but was not able to say how. She talked in a very rambling way about difficulties at home. She claimed that her mother was a crazy invalid, but gave no specific information. She never completed a thought and never answered a question directly. In this way the patient showed no improvement in the three weeks she had been here, but she did appear quieter and her facial expression was less strained. The gestalt test showed disturbances of the same qualitative character as in the first case reported, but of lesser degree. On December 11, 1931, she continued dazed and unstable. She complained constantly and had a strained, harassed, unhappy facial expression. The pupils were dilated, the left a little more than the right. There were slight athetoid movements of the left hand. Her speech was disconnected and rambling and there was still a tendency to mull over old emotional problems and confuse them with her present difficulties. There seemed to be real insight in understanding what had happened to her. When taken out of bed she complained of pain and tenderness in her limbs.

This patient showed a decidedly depressed mood. She was not only dazed but worried. She took over her every-day life preoccupations into the post-traumatic psychosis. She had memory disturbances and showed also minor disturbances in the gestalt tests, changing angles into a straight line and exaggerating primitive gestalt principles. But it remains questionable whether the depressive mood was the immediate result of the head injury or only the expression of her previous mood.

A more common type is the following:

G. U., a Porto Rican, 28 years old, was admitted to the prison ward of Bellevue Hospital charged with technical homicide. He had been driving in an intoxicated state on April 30 and turned his car over. One of his friends was killed. He himself suffered a fracture of the right and left hand and laceration of the left eye. The accident took place on April 30. The spinal fluid and the X-ray examinations were negative. The pupils were dilated, and there was a Babinski on the left side. He thought the accident had happened about three months ago. At first he said that someone hit him over the eye but immediately afterwards said that the mother of the dead friend had dropped any charges. He said that he did not know who was driving the car. He was disoriented for place. He was almost elated and talked continually in an excited way, repeating monotonously that he wanted to go home, and asked when this would be allowed. His memory quotient

was 71. His score in the ship test was 7 and in the manikin test 10 years and 4 months. There was no outstanding deterioration. The information score was 12. The marble statue and grocery tests were below average. In the tachistoscopic examination he differed slightly from the normal.

Here also we deal with a case where the changes in the mood were outstanding. There was an empty excitement with monotony and without any real flightiness. The excitement was mixed with elation. He was a young individual and previous to the psychosis he was an outgoing personality.

This leads to the case of a young girl, 18 years old, who was described as very sociable and friendly before the accident. She was admitted on March 6, 1933, two weeks after an accident, in which she was knocked down by a truck and received lacerations of the scalp.

The full history of the accident was not available, but it is reported that her unconsciousness lasted 36 hours. There was nystagmus and bloody spinal fluid, but the spinal pressure was not increased. In the surgical wards she was irritable, restless, noisy and violent. On admission to the psychiatric ward she remembered the accident, but it was not a genuine memory, only a repetition of what she had been told. Memory disturbances of other types were not present. In her emotional attitude she resembled post-encephalitic children. She asked continually in a monotonous way to be taken home, and was pestering in her attitude. Her mood was jocular, but her jokes were superficial. She said she would give whiskey to the physician. She also cried very easily. "Doctor, I like you. I like you, darling." She tried to kiss the physician and said: "I have a party at home. Doctor, sit on the chair." In the following week her restlessness subsided but her mood remained empty. She had no definite disturbance in perception nor in tachistoscopic examination.

I have observed an almost identical case in another young girl. The emotional state in these cases is an emptiness or monotonous excitement coupled with elation and lack of insight.

There is another group of cases in which sensory aphasic difficulties play a great part.

H. E., a Belgian, 41 years old, was admitted to another hospital on March 15 in a condition of stupor. According to the police record, he had fallen from a staircase and had resisted the officer who wanted to help him. A fracture of the parietal bone was revealed by the X-ray. The line of the fracture extended into the sagittal suture and another line into the lambdoidal suture. There was laceration of the scalp, bloody spinal fluid and blurring of the discs with elevation of 2 diopters. He became noisy and uncooperative and was sent to Bellevue Hospital. The spinal fluid was then xanthochromic. On the 21st he said in a rambling way that he drank some wine, fell on the

staircase, hurt himself on the skull and went to a policeman. He did not remember that he had resisted the policeman. He told about his whole past, and said that his wife left for France on March 13. He thought it was now April 12. He identified the thumb correctly, called the index finger the interior; the little finger the ring finger; and the ring finger the wedding finger. Later he called the index finger the exterior finger. He was very amiable but somewhat excited. There was still blood in his right ear. On the 23d he said: "I know you now." (Did you see me before?) "A couple of times." (Incorrect.) (Do you know this lady?) "I never saw her before. You see so many nice girls in New York you have to know each one better so you have to talk to each other. You will be a difficult professor. The questions that you propose have to be two at once. It has to be negative or positive." He gave the date as the 30th of March. "If my English is not perfect, I don't want no pity and no excuses." (What picture did I show you?) "It was about a man with a head all smashed to pieces." (Incorrect.) He had also forgotten what he had for lunch, and did not know the time of day. He complained continually about severe headaches, but he was elated and talkative.

On the 25th the memory disturbance had disappeared. He was still very amiable and talkative and somewhat manic in his mood. His skull was still sensitive. He had no difficulties any more in naming complicated objects. But on the next day he said: "What do you think I accomplished today, the first and second speak within a beautiful car. I didn't know I was doing it. It was a DeSoto. The field was wet. It was foggy weather." In the next days he did not show any aberrations except his talkativeness, restlessness and a hypomanic mood. The discs were then entirely clear. According to his report and to the report of his friends he was always an amiable and easy going person, but he had calmed down considerably when he was discharged on April 10. When seen several weeks later he impressed one as of pyknic personality, definitely cyclothymic with a tendency to elation. He had also a pyknic body type.

The hypomanic picture in this case which was observed after the head injury is definitely an exaggeration of trends which were present in him before the accident. The severe headaches did not impair his elation. There were slight amnesic aphasic signs. It is probable that the lesion near to the Wernicke region may have contributed to the general attitude of talkativeness and elation. Memory disturbances were only present at the beginning.

In another case, T. B., 45 years old, sensory aphasic signs were much more in the foreground. He had the euphoria, the lack of insight into his defectiveness and the optimism characteristic of this localized disturbance. But his disorientation at the beginning was probably due to the general disturbance in connection with the head injury.

The following case is more interesting:

A young man, 27 years of age, who had one year of college education, while under the influence of alcohol at a party, fell over the bannister to the floor below, alighting on his head. He was brought to the hospital in a stuporous condition which persisted for several days. X-ray examination showed multiple fractures at the vault of the skull on both sides. He showed bilateral Babinski reflex and on the fourth day he developed right sided convulsions with paralysis of the right side of the body, including the face. A diagnosis was made of laceration and hemorrhage in the left motor region and five days after the accident he underwent a decompression operation of the left fronto-parietal region which revealed laceration and maceration of the underlying brain. There were multiple subdural hematomas and intra-parenchymal hemorrhages. The dural vessels were tied, part of the dura was cut out, free blood and blood clots and macerated brain tissue were removed. The remaining brain looked blue and contained many hemorrhagic areas. However, he improved immediately, and in a few days there was no right hemiparesis and no recurrence of convulsions or other neurological deviations. As he began to speak he showed a severe sensory aphasia with the following features: He was restless and noisy, especially at night, but always euphoric. In his manic behavior he talked continuously in a facetious strain with many paraphasic mistakes. He was unable to name objects and showed a finger agnosia. He understood with difficulty any commands or questions whether spoken or written. He also showed paraphasic mistakes in writing. When asked to count to 10 he said: "1, 2, 3—any G.. D.. thing. All right, who can't count to 10. I would do it. Anyone could. 2—. It must be very . . . same G.. D.. thing. Where did you get that nice one? (referring to the stenographer)." He wrote a letter to his mother: "Dear Mother, I am wanting meeting. I am myself leaving meetings. I am feeling fine." Subsequently he improved very much and went home after one month, although still somewhat euphoric and showing some paraphasic mistakes in talking and writing.

The case was carefully followed and came to an almost complete recovery. He proved to be hypomanic in his temperament, even when healthy. Before the accident he was known as a practical joker, and was extremely sociable and popular. He was much interested in money and his mother. These were the two outstanding topics at the time of his post-traumatic psychosis. The head injury and sensory aphasia have therefore increased tendencies which were in the structure of his personality.

My material does not contain acute cases with motor aphasia or predominant motor aphasia. I have seen a case two years after the accident in which there was an old depression of the skull and an occipital lesion. There was right hemiplegia and a mixed aphasia, predominantly motor. This patient showed an irritability and a tendency to depression and moodiness which is so characteristic in

motor aphasia. He had also a hypochondriacal attitude towards his defectiveness, of which he was always conscious.

There are also other localized lesions which may provoke a characteristic mental attitude.

Robert B., 44 years old, was admitted to the hospital on November 20, 1932. According to his wife he was a war veteran, drank rather heavily, and then commonly looked for trouble. Five weeks previously he came home bloody, with his head split open, but did not show any mental aberration. The day before his admission he had a convulsion. On the day of his admission he was excited. "I am not right in the head. No sir, about three weeks I can't bring it out. There about three weeks, a while, one time, I would like to go to work. See if you can get my wife so that she can talk." There was perseveration in his speech. The Wassermann in the blood and the spinal fluid was negative; but the fluid showed a trace of globulin and 11 cells. The pupils reacted to light. On the right side the abdominal reflex was absent, and there was an Oppenheim reflex. He made queer movements with his right arm and right leg. He grasped and pointed with the right arm. A right hemianopia was present, and he did not react to pinching of the right side. The eye grounds were normal. Pulse 66. On the 25th he was more clear. He could name objects and said, "I do not come close enough to objects with the right arm." There was an astereognosis on the right side. He complained: "It feels like grease in my right hand." On November 28 he said: "The right side is on the right; the bad side hurts me; the east side, the left side is good." He perseverated: "The bad side is the right side. It is not any good for me." He did not name objects nor did he read or write. He did not use the right side. On November 30 he could be made to write but said "B" and wrote "R." He copied the word "angel" as "anga." Instead of the word "promoted" he read "promotes." He complained about blurring vision on the right side and of queer feelings in his right arm. He lost objects placed in his right hand. He was still astereognostic. Sometimes he felt that he held something in his right hand even when there was nothing. It was as if he "would have a baseball in his right hand." On the right side he heard people talk about him. He complained that he felt something in his right leg when he moved his left leg. The tonic tensions in his right arm had disappeared and also the queer movements he had made, but he still had a tendency to try out movements with his right arm. He reported now that three years ago he had trouble with his right toe. Lately he has also had pain in his right knee. In the next few days he became more clear. The aphasic signs had completely disappeared and the sensibility in the arm was now intact. The patient was quiet, he kept in good contact and showed no hypochondriacal trends. Later on he was readmitted because of quarrels with his wife. At that time there was no hypochondriasis nor evidence of any organic disturbance.

In this case one deals with the lesion of the parietal lobe (astereognosis) and an aphasia, which is described as parietal type. The

optic tracts are also certainly affected. But I mentioned the case not so much because of its interesting parietal symptomatology but because of the hypochondriacal attitude which the patient had towards his defectiveness. It is in some way a counterpart of the parietal non-perception of one's own defectiveness. It is more than probable that the preceding troubles which the patient had with his right side had some part in the picture. The alcoholism may also play some part but the acoustic hallucinations appeared only on the right side. We have an hypochondriacal attitude toward the defect of the right side of the body and the space corresponding to this right side of the body. The localized lesion that he suffered from the head injury has therefore a decided influence on the general attitude and mood of the patient. His previous experiences and the alcoholism are important factors in the picture.

In spite of the fact that I have worked through a large material, I do not think that more than an outline can be given concerning the changes in the mood after head injury. We notice immediately after the accident a general tendency towards resistiveness. Bewilderment, apathy, indifference with euphoria (especially in the Korsakoff cases) may follow. In a group of cases more definite changes in the mood may be in the foreground, such as depression and worries. In other cases there may be an empty excitement similar to mania, but more monotonous and more empty. Encephalitic-like monotony and a tendency to pester are found in a group of head injuries in young people. In other cases the picture may still more resemble manic states. In cases in which paraphasias and sensory aphasias are present, euphoria, manic attitudes, optimism and lack of insight into the defectiveness may prevail. Moodiness and a strong feeling for their defectiveness has to be expected in cases with motor aphasia. In a case with parietal lobe symptoms, a hypochondriacal attitude has been observed. But, whatever the moods may be, confusion and memory disturbances have always been present in the cases studied here. It is difficult to decide which of the symptoms are due to the general lesion of the brain and whether attempts at localization can be made. We should not forget that also general lesions of the brain show clinical pictures of systematic character. The cerebello-pontine symptomatology dominates the picture of multiple sclerosis even when the lesions are spread all over the brain and spinal cord. In epidemic encephalitis, the clinical picture

is more characteristic and more systematic than the histo-pathological changes. The same is true concerning general paresis. We are inclined today to consider even a general disturbance in the consciousness from a point of view of localization. We know that localized lesions of the third ventricle provoke sleep and a deep disturbance of the consciousness. Breslauer has made it at least probable that lesions in the medulla oblongata can provoke deep clouding of the consciousness. The periventricular gray has a regulating function concerning the consciousness and we have the right to suppose that disturbances in the ventricular gray have at least some influence on the genesis of the unconsciousness and the clouding of the consciousness. Forster and Reichhardt point to the fact that lesions of the occiput provoke more often loss of consciousness than injuries to other parts of the brain. Pfeifer believes that in concussion, the cortical region is put out of function by anemia. But I do not think we have the right to neglect the undoubted regulating function of the ventricular gray on the cortical function. It is more than probable that unconsciousness and clouding of the consciousness are due to a disturbance in the cooperation between the ventricular centers of the consciousness and the cortical apparatus. We should keep in mind that in sleep and in the dream and in the psychic changes which accompany lesions in the infundibular region, the psychic material which comes to the surface is of a much more individual character than the psychic material coming out in the cases reported here. The hypothesis is possible that the proximal parts of the ventricular gray have closer relation to the personal psychic material, whereas the gray of the fourth ventricle and the aqueduct deals more with the impersonal side of the consciousness. Gamper has even attempted to bring the memory disturbances of Korsakoff cases in connection with the lesions in the gray of the third ventricle and in the corpora mammillaria, but his material is taken from encephalopathia alcoholica cases in which, according to the findings of Bender and Schilder, cortical lesions are also present. It is not very probable that the sub-cortical changes are sufficient to provoke the serious disturbances in the gestalt function. But the sub-cortical apparatus has doubtlessly its part in the genesis of the confusion and probably influences also the other parts of the post-traumatic pictures. I do not think that memory disturbances and impairment of judgment of the organic type can

occur without lesion of the cortical sphere. But the pictures vary according to the drives and moods in the amount of confabulation, and it is probable that sub-cortical factors play here a part. The mental confusion of the head injury cases has its definite characteristics in comparison with the mental confusion in toxic and post-infectious states. I would venture the hypothesis, that besides the different localization of the lesion in the ventricular gray and the difference in the severeness of this lesion, the more serious and anatomical changes in the cortical lesion of brain injury cases may be of some importance. We are completely at a loss when we try to interpret the retrograde post-traumatic amnesia from the point of view of localization. Psychological factors certainly are insufficient to interpret the phenomenon. The clinical picture shows definitely that the amnesia lies deeper in the organic sphere than the psychogenic amnesia. Its way to recovery is not only more arduous but also qualitatively different. There is no question that changes in the consciousness carry with themselves a particular mood and emotional attitude. The mood of resistance is organically bound to the awakening from the deep stupor. The bewilderment and helplessness which characterizes the following phase Symonds calls "post-traumatic stupor." It is less flexible than the bewilderment and helplessness of the toxic cases. We do not know yet which conditions are apt to prolong the phase of stupor or which conditions lead to the excitement, which, in the beginning is brutal and senseless and later on becomes more differentiated. Allers has described an apathic syndrome after gunshot injuries of the head. Pfeifer is inclined to correlate this to frontal lobe lesions. Our clinical material does not give definite hints in this respect. The X-ray findings in our material show very often fissure fractures of parietal bones, but the fissures in the vault do not give a definite indication of the place of the lesion in the brain. Basal fractures very often cannot be seen in the X-ray. At any rate we have to reckon with disturbances in the mood which are strictly organic and may be either due to the generalized injury to the brain or to a local injury of the brain. I am inclined to believe that sub-cortical lesions play an important part in those disturbances of the mood which resemble post-encephalitic pictures. Ziehen has observed character changes in children after commotion which remind of the character changes in post-encephalitic children. I have pointed to the tendency to hypomanic pictures in cases

of sensory aphasia. In some of the cases not mentioned here pain asymbolia was present. Strictly localized lesions in the cortical sphere may therefore contribute to the general emotional attitude. But I have emphasized that the individual life history and the emotional constitution are of equal importance. The hypochondriacal attitude in one of our cases was due to a parietal lobe lesion. Pfeifer mentions that he has seen the catatonic phenomena nine times among 63 cases of frontal lobe lesion but they were outspoken only in three cases. In the one case of our series which showed catatonic phenomena, the connection with the injury could not be established beyond doubt. It is true we know that catatonic phenomena may be on a cortical as well as a sub-cortical basis. We may generally say that the psychic symptoms after head injury can be brought into connection with so-called generalized lesions, with sub-cortical lesions, and with localized lesions in the cortical region.

The pathological findings are sufficient to give a general idea of the basis of the pathogenesis which we have discussed. We found, for instance, in one of our cases which survived several days, a marked diffuse congestion of all parts of the cerebral cortex and brain stem associated with universal perivascular hemorrhages. In many places there were small cleavages in the tissue filled with red blood cells. The hemorrhages appeared to be most severe in the area surrounding the ventricles, but they were also present in other parts of the brain stem and hemisphere, remote from the ventricles. The mammillary bodies are also involved (Bender). But we find in such brains, as especially Symond's emphasizes, also other lesions as contusions, and small foci of destruction of myelin and ganglion cells. I do not intend to discuss the finer anatomy but would refer to the papers of Pfeifer, Rand and Courville. The latter describes especially the changes in the glia. Eckel and Winkelman have lately discussed this problem at the meeting of the American Neurological Association in Washington.

The periventricular changes deserve a special interest. Duret described, in 1887, hemorrhages in the wall and in the surroundings of the aqueduct and the fourth ventricle. He expressed the opinion that the spinal fluid was under increased pressure due to the influence of the head trauma and injury to the narrow canal system. The general opinion confirms Duret's statement. Stengel and Rosenhagen have seen similar changes in cases of tumor. Rosenhagen

found in sixteen tumor cases sometimes extensive fresh hemorrhages in the brain stem. These could be seen even macroscopically. Wilson and Winkelman found gross pontile hemorrhages in traumatic and in tumor cases. I cannot think that Duret's hemorrhages and the periventricular hemorrhages generally can be without influence upon the psychic symptomatology. One has to consider that there is a very similar pathology and even hemorrhages in encephalopathia alcoholica which has so many points of resemblance with the pictures observed after head injuries. It is true that in the alcoholic cases, the lesions are generally confined more closely to the ventricular system than in the traumatic cases. I have not mentioned the increase of intracranial pressure after head injury in these pathophysiological discussions. Subdural, epidural and subarachnoid hemorrhages may contribute to it. In other cases, the brain tissue changes as such may provoke the increase in the pressure. But there is no definite relation to the seriousness of the picture and the symptoms are not due to the pressure as such but rather to the damage it does to the tissue. Whatever part the increase in pressure may play in the symptomatology in cases of head injury, our pathophysiological considerations retain their significance.

I have discussed so far rather typical psychoses after head injury. The connection between head injury and psychosis is less obvious in the following cases and certainly much more complicated:

Samuel B., a colored boy 19 years of age, was admitted to the psychopathic ward, February 6, 1933, and transferred to Manhattan State Hospital, February 23. According to the report of relatives he was always well, and did not show any peculiarities in his behavior. There was no history of psychosis in the family. He was out of work and drank occasionally during the last three years. A month ago he was hit over the head. The examination showed him to be of asthenic build, and having a Babinski on the right side. The spinal fluid was xanthochromic and under increased pressure. The left eye was bruised.

He made all kinds of monotonous movements with his hands. Dancing, grimacing and singing in a monotonous way. His whole attitude was very manneristic and his facial expression was one of bewilderment. It was impossible to come in close contact with him. He collected saliva in his mouth. He whispered, "Lord, oh Lord." He was apprehensive and seemingly reacted to hallucinations. He rolled out of bed, grasped his camisole and said: "I will hold him 'till he sleeps, that black bastard." He grimaced wildly and his movements were almost choreo-athetotic. On February 17 he grasped everything. There was a slight expression of suffering in his face. On February

18 he was overactive, sang, drew his legs up in bed and, holding them in a cataleptic attitude, wiggled his feet sideways in a rhythmic way. On February 23 he was manneristic, showed stereotyped movements and sang much.

There can be no question but that this patient had suffered a severe head injury. But whether this cataleptic picture is merely the expression of the injury or whether it was not merely elicited by the injury, is impossible to decide. We are generally at a loss when we are unable to prove the memory disturbances and the confusion of the organic type. But even if the psychosis should be in closer relation to the injury, we should not forget that the personality and the constitutional factors may also find their expression in the psychosis. On May 23 he still showed a catatonic picture, according to the report of the Manhattan State Hospital.

Still more doubtful is the connection between psychosis and trauma in the two following cases:

John Maloney, 24 years old, had an accident on October 4, 1930. Fifteen bricks had fallen on him from a distance of 22 feet. He was unconscious for a short time, but came home. He was dazed for several days, and then began to behave in a funny way. He acted as if broadcasting and spoke irrationally. He drank perfume and said he had lots of money. The examinations of the blood and spinal fluid were negative. The X-ray showed no pathology. On December 6 he said: "I tried to get down on myself. The doctor gave me an injection on the left to bring the tongue to the left side. The tongue in the middle means a man's love. The voices sent over the radio were the voices sent by the good Lord above. I am a mortal sinner. I am worried when away from my people. It is just the same for me because I am a fighter. I am an inventor, the discoverer of science."

He was occasionally cataleptic and remained in stiff postures. On December 9: (How do you feel?) "I feel perfect. The whole bunch of us feel fine at the present time. Don't just look serious when I announce this: The world looks very short. You know Leopold? Shake hands. I am the right link of the new world, if it could be a possibility. I was hit by bricks on the top of the head and also on the back. I was dazed for a few moments and then I got up and walked to the office and there was a fellow by the name of George Petrovitch who asked me if I wanted to go home. I refused him and I went into the office and I also refused to have the doctor stitch me up." (What about your tongue?) "On this side it stands for a woman. When I put it on this side it means I am a little c. s. This is what you call a prick, and this is what you call the right wing." (Patient accompanies this with movements of the tongue to different parts of the mouth.) "To tell the truth, I am friendly. You are Jewish. You are also Jewish. You are Jewish, too. This means you have a place to go and you may be a Rabbi in a synagogue or else a physician."

He was elated and admonished the physician not to put his tongue on the wrong side. In May, 1933, according to a report from the Manhattan State Hospital, he showed a typical schizophrenic picture with hallucinations. He had withdrawn more and more and then showed deterioration and progressed steadily during the following three years.

The following case shows a similar problem:

Harold W., 35 years old, colored, was admitted to the wards on March 23, 1933. According to the history of friends, he was hit on the head on March 6 by a piece of lead pipe in an attempt to rob him. It is not known whether he was unconscious, but the next day he began to talk in a confused manner, was excited, violent, and threatened to kill his relatives. At admission he showed a recent laceration of the left frontal-parietal region. The fundi were normal. The spinal fluid and X-ray examinations were negative. He was combative, assaultive, noisy, impulsive, ran about the ward unclad and expressed ideas of grandeur. There were auditory hallucinations. He remarked: "I came here to see the world. My name is written in the sky, we are going to die. I am going to cut your head off, the world is coming to an end at three o'clock. I am the most powerful man in the world. Give me a cobra and I will cause it to lie down. I have the power of tongue, God speaks to me and gives me power. I hear people talk to me when I am alone. They call me Son of God and Prince of Priests. They say that I am crazy but they said the same thing about Jesus Christ."

It seems to be doubtful whether in these last cases the head injury had more than a psychological significance in the outbreak of the psychosis. Probably we deal in both cases with acute schizophrenic pictures.

The following case offers another interesting problem:

Mitzi G., 22 years old, was admitted on March 11, 1933. She had fallen from a window which she was cleaning, and was admitted to the surgical ward on February 25, 1933. Her sensorium was clouded. There was a fissure fracture of the right frontal and parietal bones. The Wassermann was negative, and there was no blood in the spinal fluid. The family history was without significance. Little things preyed on her mind. She mourned for a year when her father died. Nine months ago she had a baby. After she had weaned it she was depressed, and occasionally said that she did not want to live. A short time ago there had been a fire in the apartment house. On the ward the patient was apprehensive and misinterpreted her surroundings continually. She was restless, noisy, excited, screaming and overtalkative. "Don't let them hit me. Don't let them touch me. I see what they are doing. I was nervous lately. You're harming me. You're murdering me. Murder, murderer. Give me a chance. They are not bringing me back to health. I am afraid. I imagine it was just a little curse on me falling out of the window. It was just my religion. Nobody put the curse on me of falling out of the window. I felt I was going to be tortured. A few months I am

upset. I found it a little hard to take care of the baby. I felt depressed about it. It was hard to stay in. The baby was not so well. It was an accident. I was cleaning a window and felt a little dizzy. I did not know what happened. I never tried to kill myself. I felt like I was going to be tortured."

On March 12 she said: "Please don't let them touch me and hit me. I see what they are doing. My son is nine months old. I was very nervous lately." The patient continually made remarks about the physician. "I know what I am here for. You are going to kill me. You torturers. You lay them down and medicate them. I know you are going to kill me anyway. I weaned the baby after the third month. I want to live if I am given a chance. I look on you as murderers. You torture me. What have I done to deserve this. Why don't you kill me at once? I told my mother to see me until I die. How can you bear to torture another Jew like that?"

The picture in this case is that of a typical agitated depression. The aggressiveness was outstanding in this case. The psychosis had developed after head injury, which was followed by a state of confusion. One may say that the patient was depressed before. It is not probable that the patient made a conscious attempt at suicide. Unconscious factors probably played a part in the accident. But still, the picture changed after a definite skull fracture. Sadistic trends and excitement were then in the foreground. These are constitutional factors. There may have been a beginning depression. But still, the head injury had a particular part in changing the mental picture. It is only one of the instances where the individual experience and the psychic constitution are deciding factors for the type of psychosis after head injury. I do not think it is merely by chance that we deal with the picture which belongs to the manic-depressive group. In the previous discussion the relation of a manic constitution to subsequent manic pictures after head injuries was discussed. Head injury and manic-depressive psychosis seem to be in closer connection than head injury and schizophrenic pictures.

Wagner v. Jauregg, Stransky and Rittershaus believe even in a direct causal relation, between manic-depressive psychosis and head injury. I believe in a more indirect connection, as shown in the cases reported here. In my experience of many years I have never seen a case of manic-depressive psychosis in which the head injury was the only etiological factor. But the head injury in these cases certainly does not act as a merely psychic trauma but has an organic consequence for the elaboration of the psychosis.

Epileptic attacks from head injuries cannot be discussed here. In some of the cases reported here, epileptic attacks had only a

symptomatic significance and were without influence on the picture of the psychosis.

A few remarks are in place regarding the relation of psychosis after head injuries to alcoholic psychosis. In a comparatively large number of our cases, alcoholism was a complicating factor. It is true the alcoholic exposes himself more easily to the traumatic situation. In addition to that we have to assume that the periventricular gray in the alcoholic is attacked by the alcohol and so becomes predisposed or slightly changed. One may suppose that the possibility of hemorrhages, especially around the ventricular system, is greater in the alcoholic. But the symptomatology of the psychosis after head injury in the alcoholic and non-alcoholic is practically identical. There are many common features between the psychoses with encephalopathia alcoholica and the post-traumatic psychoses, such as the clouding of the consciousness, the resistiveness, the confusion and the memory disturbances. I do not intend to discuss the differential diagnosis in detail. But the similarities in the clinical pictures point to patho-physiological mechanisms, which are based on the severe disturbance in the ventricular gray in connection with cortical lesions.

This study is primarily concerned with the acute psychotic pictures after head injuries. The following case histories merely illustrate the connection between the acute and the chronic cases:

John J., 34 years old, was admitted to Bellevue Hospital on March 20, 1933. He had been knocked down by a train on March 21, 1932. The diagnosis of a concussion of the brain was made. The X-ray was negative. The left pupil was wider than the right. At first there was a Babinski on the left side, but in the next days this became bilateral. He complained about dizzy spells, had an asymmetrical face, and swayed in Romberg position to the right side. There was no nystagmus. Barany's reaction was exaggerated. There was tremor of the eyelids. When a mental test was made on March 31, 1933, he showed a mental age of 11 years 1 month. He was slow, almost confused and showed a wide scattering in the test. The memory score in the Wells test was 57. Re-examination in the course of March showed an increase in the mental age of 1 year and 2 months. The rote memory was still below normal. The logical memory improved. Memory quotient improved by 16 points. The most remarkable improvement was noted in the association tests. He still complained about headache. During the night he occasionally heard people calling him by name.

I mention this case merely in order to show the persistence of disorder of the memory and of the intellectual functioning and the variations in these which may occur.

Another case shows yet another side of the problem:

Edmond C., 29 years old, was admitted on March 22, 1933. In 1929 he had received a fracture of the skull. He was on the running board when an automobile hit his car. The head injury was followed by unconsciousness and stupor. At the time he exhibited symptoms of manic-depressive psychosis. The X-ray examination of the skull showed a fracture of the right parietal bone. In addition, he suffered a fracture of the right maxilla which caused severe pain. On February 4, 1933, he developed severe pain in the head which was followed by disorientation and coma. He showed complete anosmia, impairment of taste and vertigo. An encephalogram showed fairly large, asymmetrical ventricles and large basal cisterns, indicating a mild degree of cortical atrophy which was chiefly on the left side. He was depressed and anxious concerning his condition. His memory and attention were impaired, but there was good intelligence and insight. (Report of Neurological Institute.) When he came home from the Neurological Institute he went away, and did not inform his wife of his whereabouts, and was later brought to Bellevue Hospital. "I just came back from Pennsylvania. I have been in the mountains. The climate up there, the weather conditions and everything else is so much better than in New York. I just left the city. I was worried about myself. I used to have plenty of headaches. Nothing but headaches. Weather conditions in New York are not so good for me. It is not merely weather conditions, perhaps it is just the hustle and bustle of the big city. I was not missing, I just went away. Of course, I knew where I was going. I went on my own free will. Of course, I should have told the police department. (The patient is a policeman.) I felt 100 per cent better when I was down there. I don't think my wife knew it. I didn't want her to be worried. She knows I can take care of myself." He was unstable and irritable. In a mental test he showed superior intelligence and was above the average in memory tests (102 per cent). Gestalt tests were perfect.

This case is mentioned in order to show that after the disappearance of the memory disturbance, emotional disturbances may remain. The patient who was previously normal, well adapted and did not show any hereditary traits, afterwards showed the picture of an unstable and irritable psychopath. I may mention in this connection that after the malaria treatment of general paresis, mental deterioration may be completely absent, but the patients may show similar emotional instability as was seen in this case:

Edward O., 35 years old, was brought to the Bellevue Psychiatric Hospital on April 3, 1933. On August 18, 1932, he had been attacked by six men. He was struck on the back of the head with a telephone, and was knocked down and for a time was unconscious. His scalp was lacerated, but there was no bleeding from the nose, mouth or ears. The laceration of his scalp was closed with one stitch, and he was sent home. After the accident he was

unemployed. He complained about attacks of dizziness; then he saw double and had headaches. There was an impairment of memory. The physical examination at that time was negative. He was nervous and under increased tension. He was admitted to the Community Hospital on November 17, 1932, where he remained until December 7, 1932. During this stay he complained of dizziness, headache and pain in his back. He claimed that he imagined things. At times he seemed to be confused, and said that he saw two men in the hall watching for an opportunity to take him out. He stated that he could not sleep because the Reds were after him. They had pursued him for the past few months, and would get him. They had tried to poison his dog and would get his family. On November 28 he still held the same delusional ideas. The blood Wassermann was negative.

The wife stated at his admission that the patient had been depressed during the past twelve months, and had threatened suicide. He had attacks of dizziness and trembling. He was afraid that somebody was after him, and saw strange people in his room at night. The patient himself reported that he had been hurt by Communists. Since that time he was afraid of everybody. "I can't trust nobody. Somebody wants to grab me at the neck. I don't see how it can be true how anybody can do it to me. Sometimes I see people looking at me. I hate to go to the subway or elevated. I am afraid of getting pushed off. I can be talking to someone and my mind goes blank. Sometimes I hear as if there were two people talking of me. My house is all boarded up, windows and doors. Sometimes I see someone in my bed, and when I swing around quickly I don't see anybody." The patient did not show any evidence of mental deterioration or organic memory disturbance. The X-ray of the skull was negative, and there were no neurological findings.

This case, in which there is no evidence of fracture of the skull or subarachnoid hemorrhage, shows a paranoid and hallucinatory picture. But the emotions connected with his ideas of persecution are of psychogenic type. The way in which he gave his narrative and his reactions were too dramatic, and did not show deep emotion. His complaints were too demonstrative. The picture is psychogenic. In strict contrast to the other cases reported, the terrifying scenes during the night and his hallucinations, are in close relation to the traumatic scene. The case qualifies itself also in this respect as a traumatic neurosis in which, according to Freud, the traumatic event comes back in dreams and phantasies. (*Cf.* Kardiner.) We may draw the general conclusion that the psychological attitude in serious head injury cases is fundamentally different from the attitude in traumatic neurosis. Whereas in the organic case the accident is forgotten or is remembered without any terror and even with some satisfaction, the traumatic neurosis shows the tendency to relive the traumatic scene with terror connected with the origi-

nal event. This differentiation is, of course, schematic. A large material should be worked through under this point of view. Even if the last case reported should have slight organic changes in the brain which may facilitate the neurotic reaction, there is still a sharp difference in the attitude towards the trauma in the predominantly organic or neurotic case. Jelliffe pointed to this difference in the discussion at the last meeting of the American Neurological Association.

The various interrelations between head injuries and the previous personality have been carefully studied by Kretschmer and Gordon. The latter point to the structural damage which may lead to late degenerative changes. According to him, the paranoid pictures and the changes in the mood are the result of the disturbance in the dynamics of mental life and the old somatic trauma is not a direct etiological factor in the development of the psychosis. But we should not forget that the injury to the brain can also change in a direct way the emotional attitude of the individual. This becomes especially clear in the epileptoid and epileptic cases which have not been discussed here. The late psychotic picture may be partially due to the direct changes in the emotions, but the head injury and the headache and dizziness which it causes may also have a similar significance as the day reminiscence in the genesis of a dream. The head injury may act therefore as well as an organic as a psychogenic factor.

SUMMARY AND CONCLUSIONS.

1. In 35 selected cases of serious head injuries in which either the X-ray proved fracture of the skull or the spinal puncture subarachnoid hemorrhage or both signs of serious traumatism were present the state of unconsciousness with complete relaxation was very often followed by a state of deep clouding of the consciousness in which there was present a general resistiveness. This attitude is partially psychic and partially based on organic neuro-muscular components.

2. In the next stage there is clouding of the consciousness and far-reaching disorientation in space and time. Deep bewilderment and helplessness may be present. (A) Tachistoscopic and clinical examinations show that the patient needs a long time to arrive at any perception. The perceptive function as such is retarded. Be-

sides the retardation in the perceptive function there exists a difficulty in the synthesis of primitive impressions to a unit. Complicated pictures are not understood. (B) The gestalt function is deeply impaired. In the visual-motor gestalt patterns primitive structures appear. The perception and gestalt difficulties disturb the basis of orientation. (C) The central personality, feeling its inability, reacts with helplessness and confusion. (D) In the ship test, the manikin and the profile test, the same basic disturbance finds its expression. (E) Memory and judgment are likewise impaired, but impairment of the memory, especially for recent events, is generally more outspoken. (F) It is probable that the clouding of the consciousness, the perceptive difficulties and the disturbances in the gestalt function are partially independent from each other, although they may influence each other and are closely interrelated. (G) Memory disturbance and impairment of judgment always accompany the perception, gestalt and consciousness disturbance. The impairment of judgment is less pronounced than the memory disturbance.

3. The period of this disturbance can be short, but can also last for several weeks. It may develop after a free interval.

4. When the perception, the gestalt function disturbance and the clouding of the consciousness subside, the picture of a Korsakoff psychosis remains. In some of the Korsakoff cases the perceptive and gestalt disturbances may still be present. But the absence of the clouding of the consciousness differentiates these pictures from the pictures described in No. 2, and the perceptive and gestalt disturbances can be completely absent. The confabulations do not go parallel to the memory disturbance, and can be even present when the memory has come back to normal. The memory disturbance is chiefly a disturbance in the retention. The impairment of judgment concerns especially the correlations of the data of memory.

5. Although in some of the reported cases alcoholism was a complicating factor, it is in no way a necessary factor in the genesis of the traumatic Korsakoff.

6. The psychic material which appears in the confusional state (post-traumatic stupor of Symonds) is rather impersonal and has generally little connection with the previous structure of the personality.

7. The post-traumatic confusion is a confusion concerning the perception and synthesis of impersonal material and is well characterized in comparison with the toxic confusion in which the synthesis, the perception and gestalt are affected in their more personal aspects. The post-traumatic confusion characterizes itself therefore as a confusion of the organic type which affects primarily the ego in a psychoanalytic sense (perception ego of my own nomenclature).

8. Amnesia concerning the accident is the rule both in the confusional and in the Korsakoff state. The amnesia can be complete and can be retroactive for a shorter or a longer period. Later on, a vague knowledge concerning the accident may come back, partially based on reports by others. But this knowledge is very often distorted in a confabulatory way. In some cases the amnesia may clear up, in others the amnesia is persistent. The amnesia concerning the accident may be the only lasting psychic symptom. The resistiveness of the amnesia is in contrast to hysterical amnesia and also to amnesias which are due to mere alcoholic intoxications. The regaining of the memory of the accident is preceded very often by a confabulatory stage.

9. The patients are very often not concerned about their head injuries.

10. The mood after the accident is very often characterized by resistiveness. Apathy and bewilderment may follow. Indifference with euphoria are common in Korsakoff pictures. In some cases depression and worries may be in the foreground. In other cases excitement similar to mania may occur, but this is more monotonous and empty. Post-encephalitic monotony and pestering were found in a group of head injuries in young people. In other cases the picture may still more resemble manic states. In cases in which paraphasias and sensory aphasias are present, euphoria, manic attitudes, optimism and lack of insight into the defectiveness may prevail. Moodiness and a strong feeling for their defectiveness has to be expected in cases with motor aphasia. In a case with parietal lobe symptoms, a hypochondriacal attitude has been observed.

11. The changes in the mood are due: (A) To the general reaction pattern of the brain. Confusion as such, coupled with perceptive and gestalt difficulties, carries with itself a particular mood. (B) The Korsakoff psychosis also carries with it a typical mood. We deal with changes in the mood due to the organic state. This

organic state may be due to a so-called general injury of the brain. (C) It is possible that some kinds of blind excitements and manic states belong in the same category. (D) One is inclined to bring the encephalitic-like pictures in connection with more sub-cortical, midbrain and diencephalic lesions. (E) The localized injuries of Broca's and Wernicke's region bring with them characteristic changes in the mood. (F) Parietal lobe lesion may carry with it a hypochondriacal attitude.

12. But in the changes of the mood after the head injury, not only the impairment of generalized and local organic patterns are of importance. The constitutional emotional temperament (manic or depressive) likewise finds its expression as well as the personal fate and the complexes which are reflected in the mood.

13. We may expect that constitutional attitudes and personal, acquired patterns have more opportunity to come to the foreground when the traumatic state is less severe or less acute. Unconsciousness and death show certainly not many individual trends.

14. Even the so-called general symptoms of brain injury can justly be considered from the point of view of localization. Multiple sclerosis, epidemic encephalitis, general paresis and brain tumor certainly involve the whole brain. But the clear cut clinical pictures still show a systemic character.

15. The changes in the ventricular gray are partially responsible for the changes in the consciousness and participate in connection with the cortical lesions in the final elaboration of the disturbances in the memory, in the judgment and in the Korsakoff pictures.

16. Special emphasis is laid upon the diffuse congestion of all parts of the brain associated with universal perivascular hemorrhages. The hemorrhages are especially severe in the areas surrounding the ventricles. The hemorrhages around the fourth ventricle and the aqueduct (Duret) deserve special attention. Other foci of destruction are due to immediate damage and not to hemorrhage.

17. Similarity in the clinical picture of encephalopathia alcoholica and post-traumatic psychosis is regarded as due to similar pathology as it concerns the periventricular and cortical lesions. The possibility is discussed that the periventricular and cortical damage through alcohol predisposes to traumatic changes through head injuries.

18. My material does not offer any proof for the genesis or traumatic origin of schizophrenia, but catatonic symptoms may be a sign of local lesion, and a head injury may from a psychological and organic point of view be an eliciting factor.

19. Head injuries may directly provoke manic pictures and probably also those of depression, but it is not the exclusive cause of manic-depressive psychosis. It can change mild depressive pictures through organic and psychogenic ways into those that are severe.

20. Impairment in memory and judgment may constitute chronic pictures after head injuries.

21. Emotional disturbances and changes towards schizoid, psychopathic and epileptoid trends may be the final outcome of the organic disturbance.

22. In minor head injuries, the traumatic scene has a definite significance. It may be relived again and again in dreams, hallucinations and phantasies and may be interwoven with paranoid attitudes.

These few remarks cannot give more than a preliminary idea of the importance of this subject which has not only practical interest, but also important theoretical aspects which should be studied more carefully. Only if we increase our theoretical knowledge shall we be able to do justice to our patients.

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DISCUSSION.

DR. HENRY R. VIETS (Boston, Mass.).—I think we all agree that this is a paper of very wide significance. We are entering new ground in following Dr. Schilder into the exact pictures of post-traumatic head injuries with an attempt at correlation between the well-known pathology and the psychiatric

states. The subject, of course, is an old one from the neurological point of view. We are reasonably familiar with the pathological pictures that occur after brain trauma, either the single localized lesion with obvious neurological condition such as hemiplegia, or multiple petechial hemorrhages, which are particularly common in the sub-ependymal region of the ventricle that Dr. Schilder has called your attention to.

The psychiatric aspect of the problem, however, has never been thoroughly dealt with except possibly for the paper of Adolf Meyer, which Dr. Schilder spoke of. He now, for the first time, I think, makes an intensive study of these patients with the newer psychological apparatus at hand. The use of the picture and the geometrical tests brings out features that perhaps we had never clearly had brought to our attention before.

He shows, of course, the regressive tendencies in these patients in the period of a few days to a few weeks after the head trauma, and then calls our attention to the very large number of psychiatric states which are clearly known to all of us but perhaps have never been quite so well grouped together as in this presentation. The post-encephalitic picture, the rigidity of the muscles, the Korsakoff picture, the monotonous mania, the paraphasia, the emotional states, and so forth, he has analyzed with great care.

Then he attempts to bring in the pathological picture of the periventricular hemorrhage and correlate it with the psychiatric states. There I cannot quite follow Dr. Schilder, but, after all, does anyone know whether this is so or not? This is a pioneer effort. He has standardized some of our tests; he has given us a new way of looking into the picture of these post-traumatic states, and when attempt is made to correlate the pathology with the psychiatric picture, he may be quite right about it, and yet it is a field that needs much more investigation.

THE SEQUELÆ OF HEAD INJURY.

THE PSYCHOGENIC FACTOR.*

BY ISRAEL STRAUSS, M.D., AND NATHAN SAVITSKY, M.D.,
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In discussing the neurologic and psychiatric aspects of head injuries in a recent paper we urged the necessity for the differentiation of the organic from the psychogenic reactions to head injury, and at that time suggested a clinical method of approach, utilising all available techniques for the investigation of such neuropsychiatric disorders. The organicity of the so-called post-concussion syndrome was emphasized and a warning was recorded against the widespread tendency to include this sequel of head injury among the psychogenic syndromes. We never intimated, as Hall and Mackay have alleged, that all the changes in behavior following head blows are organic though we did insist that one must be particularly cautious regarding an opinion as to the nature of their sequelæ in contrast to injury to other parts of the body.

The medical literature on the neuroses following trauma is tainted by a polemical undercurrent and by an unwarranted hostility and antagonism toward the neurotic. This attitude has been especially evident in the writings of Reichardt, Stier and Naegali. The publications on the subject are characterized by a perpetual denouncing of the neurotic, reiterating the condemnation of the inevitable desire for compensation. These contributions also show an astounding therapeutic indifference, an almost complete ignoring of the questions of the health and mental well being of the injured. They are mainly concerned with ways and means of preventing these "neuropaths" from taking advantage of the insurance companies. This attitude has been carried over to the clinic and private office. Knowing glances are exchanged by physicians in a clinic when a compensation case enters and the scion

* Read at the ninetieth annual meeting of The American Psychiatric Association, New York City, May 28-June 1, 1934.

of Hippocrates almost unwittingly assumes the manner of a grilling Solon. The physician, who is there to alleviate human suffering, often adds insult to injury by his manner which undoubtedly traumatizes the psyche of the injured.

An almost unbelievable expression of this hostility towards the industrial neurotic is that recorded by Hoche who heard an expert say: "Für mich ist jeder Unfallneurotiker ein Schweinhund" (To me every traumatic neurotic is a filthy beggar-dirty pig). The present writers have repeatedly seen physicians in clinics reluctant and sometimes declining to treat compensation cases saying "I won't have anything to do with such birds." "Give him some money and all his symptoms will disappear." "He's a faker." Most of these remarks were spontaneous reactions to the presence of a neurosis with medicolegal implications. These remarks were usually made before any attempt at investigation of the particular problem.

It is evident that as a result of such attitudes the medical examinations are often inadequate. The examiners are often indifferent if not hostile. We have frequently watched such examinations by neuropsychiatrists who approach the investigation in an obviously biased frame of mind. Their suspiciousness and frequent expressions of scepticism irritate the patient and do not create the expected rapport between patient and physician. They overlook details and disregard all subjective reports as useless because of the "unreliability" of the patient. Such clinical practice often results in mistakes like that reported by Meyer in a case of basal ganglion disease following trauma which was considered for ten years a "hysterical chorea." There can be no justification for such a point of view. Its effect on the patient is distinctly harmful and it probably contributes more than any other one factor to the frequent and often serious secondary psychological elaborations.

The use of such police methods is distinctly foreign to the spirit of clinical investigation and practice. Its explanation lies to a certain extent in the failure to distinguish simulation from the neurotic response. The neurotic reaction is not identical with malingering. It is an unconscious response to the injury. The biologic purpose of such a reaction may in some cases be the desire for money and other forms of ego security. This generalization is so well known and has been repeated so many times that its restatement may seem

superfluous. The justification for its reiteration today lies in the frequent confusion of the two in actual practice. The following case will illustrate a common problem:

CASE I.—A 38 year old, married Jewish housewife was struck on the head by a kitchen closet which fell off the wall to which it was supposed to be firmly attached. There was a questionable loss of consciousness. She was apparently badly frightened by the accident which happened on Sept. 9, 1932. Soon after the accident she noted excessive tearing of the right eye and diminished vision in that eye which persisted to the date of our examination on Feb. 21, 1934. There was a definite history of repetitive dreams which cleared up after a few weeks.

Examination revealed no evidence of focal disease of the nervous system. There was a definitely low intelligence which antedated the accident. The right sided epiphora was definite. There was a functional hemisensory syndrome on the right side with a midline delimitation and implication of all the special senses on that side. This was found on two examinations. Great care was taken not to suggest to the patient. She spontaneously complained of deafness of the right ear.

The eye examination did not reveal any cause for the excessive tearing. There was no stenosis of the lachrymal ducts. There was some clouding of the left antrum of Highmore on X-ray. There was no facial pain or tenderness over the antrum.

A neuropsychiatrist sent by the insurance company in a few moments decided that the sensory changes were inconstant and unreliable and decided that this woman was probably simulating. He paid no attention to the epiphora.

There can be no question about the presence of hysteria in this case. It may even be possible that the excessive tearing is on a psychogenic basis. Psychogenic epiphora (bilateral) has been described by v. Hippel, Schirmer and others. The rôle of the maxillary sinus disease was not thoroughly investigated.

The case cited above is a paradigm of a frequent clinical problem. The wishful thinking of the expert is obvious. Patients are called unreliable when they report sensory changes which would force the examiner to record the presence of a conversion mechanism rather than malingering. One must be especially careful in examining these patients not to suggest signs and symptoms to them. The objection that the sensory changes are suggested to the patients by repeated examinations is answered by the unusual care we take to avoid such suggestions. The patients often enter the office or clinic complaining of unilateral deafness, or diminution of visual acuity. Charcot long ago said that those who put so

much emphasis on and see so much in simulation have little understanding of the subject. Simulation is indeed uncommon. It has been quite rare in our practices, seen in much less than 1 per cent of cases with a history of trauma of legal significance.

The propaganda-like insistence of Reichardt, Stier and others that the sequelæ of trauma are not compensable unless there is organic injury has done much to encourage an unfriendly attitude toward the neurotic. These investigators deny that the neuroses following trauma are diseases and insist that the alterations in the psyche following an injury are the direct consequences of a desire for money or freedom from responsibility. Such a point of view is important, coming as it does from such eminent students of the subject and because such opinions are bound ultimately to crystallize into judicial opinion and legislation. The German Federal Court of Claims has already denied compensation for hysteria (Riese) in 1928. The American courts, however, rightly maintain the compensability of the neuroses following trauma. (*Sykes vs. Republic Coal Co., Mont.*)

Continued successful adjustment or the capacity to work is a function of a constellation of factors, psychological and physical. Injury to any of these factors may disturb the equilibrium with resultant inability to work. Psychological factors are just as potent in disturbing function as physical ones. The resulting disturbance may be as serious and as incapacitating as an organic lesion. One need only recall Prince's cases of hysteria of 28 and 29 years duration. We have had similar experiences. The disability due to psychogenic disease may therefore persist for years without adequate treatment and may even be permanent. It may also continue so long that no method of therapy will be of any avail.

One cannot wave aside peremptorily the concept of psychic causation, one of the most significant contributions to neuropsychiatry in the last century.

The problem of the etiology of the psychoneuroses is an extremely complicated one. The arbitrary assertions of some of the students of this subject are a result of this failure to take cognizance of the many factors that contribute to the development of the morbid reactions we are interested in. These cocksure generalizations are evident schematizations, bold attempts to force the accep-

tance of a certain body of doctrine because of its economic and social importance.

The question arises whether this "wish for compensation" may not be the result of certain influences from the social milieu on the worker. The effect on the workers of continued subtle suggestions from existing institutions cannot be ignored. The concept "compensation for injury" becomes part of the psychosocial equipment of the individual, an aspect of his attitude toward reality, of his Weltanschauung, if you will. It creates in the individual worker what psychologists might call a "mind set"—a peculiarly receptive mental state so that when injury occurs there ensues a rapid, unconscious wishing for compensation. Can such influences be considered etiologic factors? Is the reaction of the average worker to injury a scheming and planned attempt to obtain as much money as is possible? The reduction of the whole problem to this one formula is an oversimplification of the problem. There are too many instances where the amount of secondary gain from continued illness is not enough to account for such persistent disability.

That the current notions of a particular epoch, are part of the complicated system of forces that determine behavior has been proved many times. The perusal of any history of ideas or thought will furnish ample proof for this observation. It is interesting to recall how Rousseau reacted to head injury in 1776. Living in the age of the supremacy of the phlebotomist he struck his head and apparently lost some blood. He felt very well after this head injury, in fact better than he ever did before. While it is possible that this accidental bleeding relieved a hypertension and chronic uremia it is interesting to speculate whether the mental representation that the bleeding is of value was responsible for this unusual state of well being. Perhaps the head injury relieved unconscious guilt. None of the common post-traumatic complaints were recorded.

The emphasis on the frequency of defective constitution and heredity in the neurotic is the *coup de grâce*, the final stroke in the united attempt to belittle and degrade the neurotic. It is clearly an *argumentum ad hominum*; an insistence that the victim of an accident is wrong and deceitful because he is no good and comes of poor stock. This concerted effort to blacken the character of the neurotic may be good lobbying but is poor scientific medicine.

The so-called constitutionally predisposed are not excluded from being insured. The insurance examiners rarely make an effort to determine the presence of psychic insufficiencies and character anomalies. They apparently assume the risk when they insure the injured. They would have a difficult task to determine these constitutional defects. There are no available yardsticks to measure these imponderables.

The undoubted presence of so-called predisposing factors, a nebulous concept as far as the neuroses are concerned, does not annul the causal significance of the trauma. All disease processes are the result of the interaction of exogenous and constitutional factors. A strong susceptibility or liability to develop a particular disease merely increases the risk for insurance, and does not relieve the insurer of liability. (N. Y. Court of Appeals.)

We have encountered three types of psychogenic disturbance following trauma to the head.

- (1) Terror neuroses,
- (2) Psychoneuroses precipitated by trauma,
- (3) Secondary psychological elaborations.

(1) The terror or *Schreck*-neurosis is the only traumatic neurosis in the strict sense of the word. The concept of the *Schreck-neurose* was first delimited by Horn in 1916. The clinical picture has been summarized by Bernhard and Libman. It is the direct reaction to the sudden threat to ego integrity, the psychosomatic response to the overwhelming of the individual by impending calamity. It is not often seen in head injuries and has been classically described in earthquakes (Baelz and Stierlin). The usual automobile and industrial injury happens so suddenly that there is little time for the patient to be impressed by the terrifying prospect of impending destruction. It is quite rare in head injuries also because of the frequent loss of consciousness and retrograde amnesia. Workers are usually hardened to the hazards in their occupations and are keyed up to the dangers in their work.

Active anxiety with marked changes in the vegetative nervous system are usually present. Insomnia and repetitive catastrophic dreams are characteristic. Severe reactions are not unusual and are characterized by apathy, paradoxical elation and at times confusional states. Displacement of affect is unusual. The onset is

usually immediately after the injury with a constant spontaneous tendency to improvement unless secondary psychological complications set in. Occasionally one sees what has been called retrograde terror neurosis (Sperling)—a similar type of reaction to what might have happened after an interval of relative well being.

The reaction to danger is at times of the nature of a conversion hysteria. Bonhoeffer noted this syndrome among the *Schreckneurosen* and attributed it to a specific predisposition, a cleavage along preformed planes. Perhaps the explanation lies in the readiness of the patterned response to danger called by Kretschmer the "sham-death reflex," or in the protective inhibition of highly integrated motor and sensory units (Kardiner). We have noted hysteria in patients immediately after coming out of prolonged unconsciousness following head injuries. Whether danger to the ego can be perceived by the unconscious remains to be determined by further studies.

(2) Trauma or threatened trauma to any part of the body can precipitate any of the psychoneuroses. The problem of head injury in these cases is somewhat different because of the question raised as to the rôle of organic injury to the brain in interfering with repression and other processes that maintain psychic equanimity. Glaser and Anderson recently asked whether head injuries can sensitize to the development of the psychoneuroses. It must be assumed that the sequelæ of head trauma like other organic brain diseases may occasionally give rise to such endogenous reactions.

The trauma, by association may re-awaken castration anxiety and bring into consciousness infantile phantasies laden with guilt. The compensation situation may merely be an indifferent object to which affect is displaced, a screen to hide the real conflict from the conscious self. The neurosis may represent the re-activation of symptoms previously present (Kronfeld) or they may appear in a person who was always apparently well. This type of case often doesn't respond to settlement of the compensation though it has been noted that even in these cases the persistence of unadjusted claims will interfere with recovery. A secondary gain from illness has developed.

These psychoneurotic syndromes usually appear immediately after the injury and their further course hardly differs from that

of the usual psychoneurotic except for the presence of the compensation problem.

(3) Secondary psychological elaborations. Psychogenic superimposition in organic sequelæ to head injuries is frequent. If followed for long periods a large percentage of these injured show functional complications especially if no satisfactory solution is found for their social, economic and personal difficulties. We have observed them in about half of our patients. After satisfactory monetary settlements we have noted the disappearance of the psychological overtones and the persistence of organic symptoms. Subjective improvement doesn't always prove the functional nature of a series of complaints, if it appears after lump sum settlement or any other satisfactory solution of the economic difficulties. Incentive for work is again present in spite of subjective discomfort. There is no doubt that thresholds for pain may be heightened by such an acceptable solution.

It is interesting to note that the patients with a post-concussion syndrome and with relatively severe subjective complaints who continue to work, and make no demands for compensation rarely show these functional elaborations.

CASE 2.—An automobile accessory salesman of 27 was seen with the complaint of headaches and dizziness of two years' duration. These complaints date from the day of an accident when he was struck in the occipital region by a cellar door. He was unconscious for about 3-4 minutes.

There is no compensation problem. He came to the office for the relief of a severe paroxysmal headache. These attacks would recur at irregular intervals, last a few days and then disappear. He would feel much worse during and just before bad weather. The headache is pounding and so severe that he is forced to leave his work. He finds it difficult to stoop over to pick up objects. Dizziness sometimes becomes very marked when he attempts to tie a large package. He has worked steadily since the accident. He does not plan to re-open compensation. He is earning a fair salary and feels that the sum allowed would not be sufficient. He wants to continue working because he is interested in his work and loathes to be idle.

The neurological examination was entirely negative except for marked discomfort and dizziness on upward gaze. No evidence of any type of psychological elaboration was found.

CASE 3.—A city employee was examined on March 14, 1934. On Jan. 11, 1933, while having lunch in a restaurant another employee in the same department walked up to him and struck him in the jaw. His jaw was fractured. He was knocked out for three days. His complaints were dizziness, severe

pain in the jaw and head, occasionally locking of the jaw with inability to open it and an inability to do his work. The examination showed an insensitive individual, with a diminished right ankle jerk and a very faint plantar reflexes on both sides. A change in position caused dizziness and his head and body became flushed.

This man went back to his work though he complains that the work is too strenuous for him and that he suffers intensely from anxiety, headache and vertigo during such periods. He refuses to accept compensation because the amount of money would be insufficient for his needs. There were no psychogenic complications. His work has been changed to a lighter type with the same salary.

These two men presented the post-concussion syndrome without psychogenic complications. This ability to continue at work despite subjective discomfort is a frequent situation. Some of the injured repeatedly try to return and fail. The success of such an effort depends on a number of factors—intensity of the symptoms, character of the work, make-up of the individual. Proper guidance and psychotherapy in the very beginning of the illness are important. We nevertheless so often see patients who cannot make an adjustment, in the face of such a marked disadvantage to their own welfare that we wonder whether something more serious than a mere wish for money is at the basis of their change in behavior.

If unemployment persists because of the severity of the complaints or if the case is not closed for other reasons these psychogenic complications inevitably occur. These functional changes may come on in spite of the persistence of the signs and symptoms of intracranial injury. We not infrequently witness the development of the psychogenic features as we follow the patient.

CASE 4.—A laborer of 38 was injured while at work, striking his head, with unconsciousness for a number of hours. This happened three years before his admission to the Mt. Sinai Hospital in October, 1933. He complained of headaches, dizziness and inability to work. The neurological examination was negative and encephalography showed slight dilatation of the ventricular system. There was no increased spinal pressure. No psychogenic features were noted in the hospital. A diagnosis of traumatic encephalopathy was made. The compensation problem was still open.

About half a year after his discharge from the hospital he appeared complaining of increasing deafness on the left side. An examination revealed no lateralization of the Weber sign. All the other senses on the same side were implicated and he at the same time showed a typical functional hemisensory syndrome on the left side. He was deeply concerned about his future and evidently annoyed at the failure to come to some type of settlement.

We have seen other similar cases. Sometimes the functional complications set in as the patient is improving or even after recovery when the medico-legal aspects of the case are still unsettled.

CASE 5.—A Chinese of about 45 was injured in an automobile accident about one week before our examination. He lost consciousness for a very short time. He complained of headaches, dizziness, inordinate fatigue and pain and parasthesiae on the left side of the nape of his neck. The neurological examination showed definite evidence of some degree of nerve deafness on the left side with lateralization of the Weber to the right side. The otoscopic examination was negative and diminished acuity for tones of higher frequency was present. Caloric tests showed an abnormal response on the left side. There was hypaesthesia in the distribution of the left great occipital nerve. There was some tenderness in the same distribution. The site of the injury was the left occipital region. The impression at the first examination was that these sensory changes were organic. He was examined for the first time on July 17, 1933.

He was re-examined on March 6, 1934. There was pronounced subjective improvement. All his complaints were less marked. He seemed quite comfortable. He was obviously annoyed and irritated by the inevitable legal delays. The previous findings were almost completely obscured by the superimposition of a hysterical left hemisensory syndrome. It is interesting to note that in our first communication to the lawyer the development of such psychogenic complications were predicted. "If this case should not be settled as soon as possible; if the socio-economic difficulties resulting from the injury persist long enough, psychological elaboration of the existing defects will inevitably appear."

While these complications most often occur in patients who have very little organic disease they sometimes appear in those with definite and sometimes severe organic changes.

CASE 6.—After an injury to his head and body in November, 1931, a Spaniard of 42 complained of pain in the back of the neck, definite weakness in the right lower extremity and headaches and dizziness with effort. He was seen on July 18, 1933, his case not having been settled.

The examination showed a right Horner's syndrome and definite pyramidal tract signs including a Babinski in the right lower limb. The upper limbs were free. There was definite weakness and spasticity of the right lower limb. He was able, however, to go about with relative ease. There was a definite functional left hemisensory syndrome. In this case there was a post-concussion syndrome and a probable traumatic hematomyelia and in spite of these definite organic changes a functional superimposition.

One must recall in evaluating these reactions that occasionally these psychological elaborations are seen in other organic diseases.

A psychoneurosis may set in as a result of long continued illness of any type. It is evident that prolonged or severe illness implies frustrations of ego and sex impulses with the necessity very frequently for a radical realignment of libido. It is worthy of note that only a very small percentage of patients with severe or protracted chronic diseases develop such psychogenic syndromes. We recently saw a patient with a Weber syndrome due to a vascular lesion on an atherosclerotic basis with a definite functional hemisensory syndrome. The dynamics of the psychological response to chronic illness merit further investigation.

The secondary gain from these psychological superimpositions is not always monetary. One occasionally finds the hysterical manifestations persisting after an adequate money settlement. The injured will subconsciously "cling" to the signs and symptoms if the gain is promising.

CASE 7.—A woman of 35 who insisted she was 24 was seen on Oct. 18, 1933, two years and seven months after an automobile accident during which time she injured her back and head. There was an indefinite history of unconsciousness. She lost power in both lower limbs immediately after the accident. She was completely paralysed for two weeks and was able to get about on crutches for about 8 months. She was considered to be suffering from an organic lesion of the spinal cord. She was in a plaster of Paris cast for a while. She complained of pain in the lower part of her back. She improved considerably and then one and one-half years after the accident following an attack of pleurisy she again became paraplegic for 6 mos. with subsequent gradual improvement.

She was seen a few months after an excellent monetary settlement. All concerned were extremely gratified by the results of litigation. Following the settlement she showed little signs of recovery. She continued to complain of severe pain in the back, weakness in both lower limbs, marked asthenia, precordial discomfort and numbness in the right lower extremity. The examination showed a definite right hemisensory syndrome of the functional type with implication of all the special senses on that side; pronounced tenderness over the whole spine and no evidence of any disease of her internal organs.

Two months before she was seen, after the legal settlement she was unable to raise her head for two weeks.

This woman of 35 made a very poor impression on the examiner. She was unmarried, edentulous and rather unattractive. She was much concerned about her failure to marry. She had no occupation or profession and had been unemployed for some time before the accident. She was rather unpopular in her family circle before the accident and was considered backward and somewhat of a failure. She apparently relished the love and sympathy given

to her during her illness. The incapacity resulting from the accident justified her failures and precluded the necessity for further planning and competing. She did not return for psychotherapy. She refused to give up her illness. It was yielding tremendous returns.

This secondary gain from the illness is not always as easy to discover. It is not always as near consciousness as in this case. Occasionally no cause can be found for the persistence of the functional changes without exhaustive psychological study, a procedure rarely possible with the usual traumatic case. Sperling has shown what such psychological probing may reveal. It would be worth while to study the following case psychoanalytically to ascertain the cause for the persistence of a hysterical symptom complex six years after an injury where no litigation was involved.

CASE 8.—A man of 42 is sent to one of us on April 29, 1934, with the complaint of recurrent swelling of the right side of the face following a facial paralysis on Dec. 18, 1932. When 4 years of age he had a transitory facial paralysis on the same side. Further study of this problem showed that he was probably suffering from the clinical entity recently described by New and Kirch, "Permanent enlargement of the lip and face secondary to recurrent swellings and associated with facial paralysis."

He also stated that 6 years before, during a strike he was punched in the face and lost consciousness. Since that time he has been aware of a definite diminution of visual acuity of the right eye. Examination of the eye was negative. The fundi were negative. There was a hemisensory syndrome on the right side with the usual changes pointing to the presence of a conversion syndrome. All the special senses on that side were involved. The mental examination was negative. There were no evident situations or difficulties to which he was reacting. He did not return for further psychological study.

TREATMENT AND PROPHYLAXIS.

(1) The terror neuroses usually clear up spontaneously if no secondary factors set in. Sedative and symptomatic medication with simple persuasive psychotherapy are usually sufficient.

(2) Physicians must become interested in treating the injured and must cease acting either as adjusters for insurance companies or as interested agents for the injured. They should treat the injured with the same respect and consideration they show other patients. They should listen attentively to all complaints and come to no conclusions regarding the nature of a particular syndrome without thorough clinical investigation.

(3) Questions of medico-legal significance should not be unnecessary discussed with the patient. As many of the legal details as possible should be attended to by others. Suggestions that a serious injury is present should be avoided.

(4) The psychoneurotic syndromes coming on after trauma should be treated with psychotherapy.

(5) The injured should be kept at work if at all possible; or he should be returned to his work as soon as possible after the injury. If necessary he should be given a lighter job at the *same salary* in the same factory or office. Idleness should be avoided if possible.

(6) Lump sum settlement should be accompanied by adequate physical and psychotherapy. Reopening of compensation after lump sum settlement should be made increasingly difficult.

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Comment.

THE THOMAS W. SALMON MEMORIAL LECTURES.

Dr. Charles Macfie Campbell, Professor of Psychiatry at Harvard University and Director of the Boston Psychopathic Hospital, delivered the Thomas W. Salmon Memorial Lectures 1934. Dr. Campbell's lectures delivered before the New York Academy of Medicine on April 13, 20 and 27, constituted the second series provided for in 1931 by the Thomas W. Salmon Memorial Committee. Dr. Campbell dealt with contemporary trends in psychiatry. He pointed out that Dr. Salmon, in whose honor this lectureship was founded, exemplified in a peculiar way the progress and transformation of psychiatry during the first quarter of the twentieth century. One of the major concerns of the nineteenth century had been the superseding of old methods of care and the establishment of humane and scientific methods of dealing with patients. Under the stimulus of the study of brain pathology mental disorders had been investigated from a materialistic standpoint, and physiological, chemical and endocrinological studies had added their contribution. These impersonal methods, however, were found to be of limited application and required to be supplemented by what has been called the genetic-dynamic viewpoint.

The study of mental disorders became a study of the human personality reacting to most varied situations, which may exist not only in the hospital but also in the home, the school, the court and the factory. Moreover, the study of the personal aspects of physical disease is found to be essential to the complete understanding of illness in general and its treatment.

Reviewing the acquisitions to our knowledge of mental disease which have come from pathological anatomy, biochemistry, neurophysiology, Dr. Campbell outlined the development of the concept of psychogenesis as illustrated by the work of Freud, who laid emphasis on the so-called unconscious factors of motivation, and of Meyer who stressed rather the successive adaptations in the life history of the individual. Under the influence of these two schools psychiatry became more personal. Additional light on the nature

of the personality was furnished by the anthropologist and the geneticist, and by the study of the psychology of childhood.

In consequence of these various shiftings and enlargement of interest psychiatry ceased to be a descriptive discipline and has concerned itself with the real forces underlying the difficulties of individual patients with a view to helpful intervention.

In his second lecture Dr. Campbell carried forward the theme of the first by discussing classification versus dynamic analysis. A mental disorder is not looked upon as a meaningless disturbance of extraneous origin, but rather as the patient's unsuccessful attempt to solve his life problems, which should be studied merely as one section of the individual's life history. Undue concern with classification and the labelling of cases interferes with the appreciation of the dynamic nature of psychiatric problems. A division of cases under such headings as organic, toxic and symptomatic psychoses is of course valid, and in some of these types the impersonal factors may play a prominent etiological rôle. Such symptomatic or pathological classifications, however, leave a large residue of cases inadequately represented and which constitute a serious challenge to the psychiatrist. Notably among these are the schizophrenic cases. Dr. Campbell discussed the question as to whether this group represents an impersonal disease process, and he expressed the opinion that an intensive study of dementia præcox cases "has not enabled one decisively to demonstrate the presence of an impersonal disease process revealed either by clinical symptoms or by histopathology."

The third lecture aimed to show how the general trends outlined in the first lecture converge upon the particular psychiatric problems discussed in the second. Using the schizophrenic reactions for illustration Dr. Campbell suggested that the psychosis may not be an addition to the personality but may reveal the personality. Many of the symptoms which at first glance may appear quite alien to every day life and incapable of interpretation in terms of conventional academic psychology may no longer be so if we expand sufficiently our knowledge of actual human experience.

The stuporous reaction of the schizophrenic has to be considered along with the incidental stuporous reactions which occur in many lives. The withdrawal of interest from the real world and the inability to accept painful situations are not limited to patients with

mental disorders. The akinetic and hyperkinetic symptoms of the schizophrenic are to be compared not only with the motility symptoms of the encephalitic process or following the administration of bulbo-capnine, but also with the motor states of the ecstatic and the fakir. The bizarre and extreme reactions of the schizophrenic may find a parallel in the life of the philosopher and of the ascetic. The phantastic picture which the schizophrenic may have of the outside world and the peculiar form in which he presents his experience find analogies not only in dream but also in waking life. Speech is not always and has not always been limited to the cut and dried presentation of matters of fact in terms of rigid and universal significance. In certain times and with certain individuals words have furnished the material for exhilarating mental sport. As to the dissociation in the schizophrenic between affect and mental content, one may find in human life somewhat analogous situations when matters of gravest import are dealt with in a whimsical and apparently casual way.

The detailed review of the schizophrenic mode of reaction, therefore, shows that the patient is not so alien to the normal individual as might at first appear. There may appear to be little excuse for his very individual way of dealing with life, and external catastrophies do not seem to precipitate this type of reaction. The absence of any severe external strain does not mean, however, that the schizophrenic individual is not facing crucial issues of life which make an undue demand upon him. It is not the threat to personal life to which he succumbs but it is the threat to his personal value.

How far the principles discussed in this lecture carry one in the study of the very broad field of the schizophrenic disorders is a subject for further systematic research. Attention to the possible adaptive significance of the schizophrenic symptoms and to their general human quality will enable the physician to understand and to deal in a more intelligent way with the practical needs of his patients.

VOLUME NINETY-ONE.—At the seventy-seventh annual meeting in Boston in 1921 both the Association and the JOURNAL took new names.

At its birth in 1844 the Association had been ponderously designated as "The Association of Medical Superintendents of American Institutions for the Insane." With such a title, constitution and by-laws were hardly necessary; the name itself was comprehensively descriptive, and indicated the exclusive nature of the organization. The original thirteen members were mostly from the New England and North Atlantic states; Canada was first represented at the meeting at Utica, N. Y., in 1849.

With the adoption in 1892 of a new constitution, opening the doors of membership to assistant physicians in mental hospitals, as well as to accredited extra-mural workers, the Association became known as "The American Medico-Psychological Association."

When the present titles of the Association and the JOURNAL became official in 1921 it was thought proper to publish the AMERICAN JOURNAL OF PSYCHIATRY as a new series beginning with volume I, but indicating also the continuing number of the old series of the AMERICAN JOURNAL OF INSANITY. Accordingly for the past thirteen years the double notation has been used. For the sake of simplifying bibliographical reference, as well as to reflect unambiguously the age of the JOURNAL which has been issued continuously since 1844, it is now deemed wise to restore the original volume notation. The present number, therefore, is the first of volume ninety-one. In keeping with the practice of a rapidly increasing number of scientific publications we also discard the Roman numerals to designate the years.

STANDARDIZATION OF BIBLIOGRAPHIC REFERENCES.—The Medical Library Association is encouraging a movement to eliminate Roman numerals in indicating the volume number of scientific journals and to standardize an international formula for bibliographic notations. Whoever has had to do with the compiling of indices or bibliographies, or in searching the literature in any connection, is fully aware of the difficulties and annoyances occasioned by the discrepant usages which have hitherto prevailed in the citation of references.

The attention of authors submitting manuscript to the JOURNAL is particularly directed to the importance of uniformity of bib-

liographic style. It is requested that volume numbers of journals be referred to by Arabic numerals, and that the following formula,

Amer. J. of Psychiatry, 91:425-436, 1934,

which is the one used by the Quarterly Cumulative Index Medicus, be used for all bibliographic entries.

A little attention to these items on the part of authors will simplify the use of bibliographies and enhance their value.

DR. BURDICK RETIRES.—Dr. Charles M. Burdick, superintendent of the Dannemora State Hospital for Criminal Insane, retired on May 1, 1934. Dr. Burdick entered state service in 1901 at the St. Lawrence State Hospital, was attached later to Central Islip State Hospital and succeeded Dr. John R. Ross as superintendent of Dannemora State Hospital in 1922.

"Correction" for April, 1934, says: "Dr. Burdick has earned through many years of loyal and excellent service the retirement of which he now avails himself. Nevertheless the Department of Correction feels that it is losing one of its outstanding institutional heads, and while it congratulates him upon the opportunity to enjoy some of the less serious and responsible things of life, the staff of the department and the employees of the Dannemora State Hospital deplore the severance of the personal contact which his retirement necessitates. It is the hope of his friends in the department that he may live long and enjoy the rest which he so genuinely merits."

ADDITION TO CLASSIFICATION OF MENTAL DISORDERS.—It has been suggested that a general term be added for the inclusion of other non-psychotic diseases. Accordingly at the end of the list beginning "930-yxx Epilepsy," and just before behavior disorders (p. 1373, this JOURNAL, May, 1934) is the following:

y00-y05 Other non-psychotic diseases or conditions to be specified).

Under the heading of "Psychoses with Mental Deficiency" and the heading "Mental Deficiency without Psychoses," the following sub-groups will appear:

1. Idiot.
2. Imbecile.
3. Moron.
4. Borderline.
5. Dull normal.

These should be noted in records and any copy of the classification as published in the May number of the *AMERICAN JOURNAL OF PSYCHIATRY*. The changes to be noted are under the group shown on page 1373.

HOSPITAL POSITIONS.—At the New York meeting of The American Psychiatric Association the plight of refugee psychiatrists and others needing aid was brought to the attention of the Council, with the request that some assistance be rendered. This is obviously a difficult problem especially in respect to non-residents or those who are not United States citizens. The situation is further complicated by civil service regulations in the different states. The National Committee for Mental Hygiene, 50 West Fiftieth Street, New York, occasionally learns of opportunities, however, and has expressed a willingness to endeavor to assist to place well-prepared psychiatrists, if they will register in detail their credentials, including education and experience. Mental hospital superintendents seeking qualified psychiatrists for their staffs will be of great assistance if they will also indicate their needs to the National Committee.

News and Notes

MEETING OF THE AMERICAN PSYCHIATRIC ASSOCIATION.—The ninetieth annual meeting of The American Psychiatric Association was held at the Hotel Waldorf-Astoria, New York, May 28 to June 1, 1934.

On Monday, May 28, the section on Convulsive Disorders presented its program, having a morning and an afternoon session. On this day, also, the new section on Forensic Psychiatry first made its appearance with morning and afternoon sessions.

The regular sessions of the Association began on Tuesday, May 29, Dr. George H. Kirby, the President, presiding. Addresses of welcome were given by Dr. Frederick W. Parsons, Commissioner, Department of Mental Hygiene, New York; Dr. Bernard Sachs, President of the New York Academy of Medicine; Dr. Charles I. Lambert, President of the New York Psychiatric Society and Dr. Clarence O. Cheney, President of the New York Society for Clinical Psychiatry.

In his presidential address, Dr. George H. Kirby discussed the relationship of psychotherapy to psychiatry in general, and in particular, the field of psychoanalysis. Dr. Kirby's masterly address is printed in full in this number of the JOURNAL.

On Tuesday afternoon, May 29, there were two section meetings, one of which was a joint session with the American Association on Mental Deficiency.

On Wednesday morning, May 30, the Association held a joint session with the Section on Psychoanalysis.

Among the large number of papers presented during the scientific sessions of the Association were several devoted to Psychiatric Aspects of Medical Problems; The Significance of some Common Hospital Functions (such as the farm, standard of up-keep in an institution, the hospital dairy and food service); Studies in Pathology; Studies from the Veterans' Hospitals; The Endocrines and Vegetative Systems; and various miscellaneous studies.

On Tuesday and Wednesday, 29 and 30, films were shown depicting various mental hospital activities. Located near the meeting halls, were a scientific exhibit and a commercial exhibit.

Arrangements were made for members and guests to visit nearby institutions. The Committee on the Special Program for Ladies provided an interesting series of events for the entertainment of guests.

On Wednesday evening, May 30, the annual dinner was held in the Grand Ballroom of the Waldorf-Astoria Hotel which was attended by more than seven hundred members and guests. Dr. Willard C. Rappleye, Dean of the College of Physicians and Surgeons, Columbia University, gave the annual address on the subject "Psychiatry as a Medical Specialty."

Eight Past Presidents of the Association received badges of honor at the annual dinner. They were Dr. William F. Drewry of Richmond, Virginia, who was absent but was represented by his daughter, Miss Phoebe; Dr. Albert M. Barrett of Ann Arbor, Michigan; Dr. William A. White of Washington, D. C.; Dr. Adolf Meyer of Baltimore, Maryland; Dr. Samuel T. Orton of New York; Dr. Earl D. Bond of Philadelphia; Dr. William L. Russell of New York; and Dr. James V. May of Boston. Badges of honor will be sent to five Past Presidents who were unable to be present.

Following the dinner a program of music and other features was presented by leading broadcasting artists, with dancing after the entertainment program.

In accordance with the report of the Board of Examiners and upon recommendation of the Council, the Association elected 12 Fellows, 103 members and 37 associate members.

The following officers were elected for 1934 to 1935:

President, C. F. Williams, M. D., South Carolina.

President-Elect, C. O. Cheney, M. D., New York.

Secretary-Treasurer, William C. Sandy, M. D., Pennsylvania.

For Councilors for three years: George H. Kirby, M. D., New York; Forrest C. Tyson, M. D., Maine; Glenn Myers, M. D., California; Winfred Overholser, M. D., Massachusetts.

Dr. Albert C. Buckley, Philadelphia, was elected auditor for three years.

The Section on Forensic Psychiatry reelected Dr. William A. White, Washington, D. C., as Chairman and Dr. V. C. Branham, Albany, New York, as Secretary; the Section on Psychoanalysis

reelected Dr. A. A. Brill as Chairman and Dr. Leo Bartemaier as Secretary; the Section on Convulsive Disorders elected Dr. J. H. Bell of Virginia, as Chairman, Dr. Temple Fay, Pennsylvania, as Vice Chairman and Dr. Chester A. Marsh, Pennsylvania, as Secretary.

The Association voted to hold the next annual meeting in Washington, D. C., the time to be decided upon later by the Executive Committee.

There were registered with The American Psychiatric Association 556 members and 429 guests. If the members and guests of the Association on Mental Deficiency and other groups are included, the general attendance will approximate 1450. From every viewpoint, the New York meeting was unusually enjoyable and successful.

SANDY.

SECOND INTERNATIONAL CONGRESS ON MENTAL HYGIENE.—It has recently been announced by Clifford W. Beers, General Secretary of The International Committee for Mental Hygiene, that the Executive Committee of the Second International Congress on Mental Hygiene, at a meeting recently held in Paris, officially decided to hold the Congress in Paris from the 27th to the 31st of July in 1936 instead of holding it as originally planned in 1935. This decision was reached largely because of the conditions existing throughout the world which it was felt would make it difficult to hold a successful Congress in 1935.

THE WASHINGTON CONFERENCE ON CHILD WELFARE.—A Conference on Child Development, Care and Training was held under the auspices of the Mooseheart Laboratory for Child Research, in Washington, February 22, 24, 1934.

The Hon. James J. Davis, U. S. Senator from Pennsylvania, and founder of Mooseheart, spoke of the good work that had been done in the "City of Childhood" during its twenty years of existence. This institution had not only relieved thousands of orphans and hundreds of widows, but had opened new paths of investigation in child study of utmost value for educators, psychologists, and sociologists.

Dr. Martin L. Reymert, director of the Child Study Laboratory, briefly traced its history and called attention to the exceptional opportunities which the laboratory offers owing to the long periods of residence of the children, the average stay being nine years, while at least 25 per cent remain 16 to 18 years. Thus the whole period of development from babyhood to adulthood can be studied under controlled conditions. The child population at Mooseheart ranges from 1200 to 1400. Among studies in progress he mentioned speech defects, behavior problems, special disabilities, size of the heart in the growing child.

Dr. Edgar A. Doll of Vineland, New Jersey, read a paper on *Future Clinical Research on Children*. He emphasized the fact that clinical child study is an art rather than a science, because in most cases where such studies are undertaken, either the number of children is too small or the opportunities for observation are too haphazard to yield valuable correlated data.

Dr. James P. Molloy of the Institute of Juvenile Research, Chicago, spoke on *Psychiatry and the Modern Child*. He stressed the shift which psychiatry has made from the study of the subnormal to that of the normal child. Behavior problems in adults are discouraging because they have their roots in family and community influences in early childhood. The study of the normal child furnishes a standard by which the inadequacies of the delinquent child and its environment may be gaged.

Research in the Field of the Psychological Development of the Child was the subject of Dr. Charles H. Judd. He pointed out that in the study of children two periods have been especially emphasized—infancy and adolescence, while the period from about six years to fourteen has been almost entirely neglected. Most of our study of children has been fragmentary, in that some particular aspect of child life has been singled out for protracted observation. Longitudinal and cross-sectional studies of many children under controlled conditions, such as exist at Mooseheart, are a *sine qua non* of a fuller insight into child development and character.

The Physical Growth of the Child was discussed by Dr. T. Wingate Todd. He stated that too much reliance has been placed on statistics based on insufficient data, with the result that the *child* has almost become an abstraction. He advocated placing the emphasis on *children*. They differ in a number of ways. Until the

school plateau in physical maturity is reached, the better nurtured children are physically the larger and mentally the more advanced. After the sixth year, bodily growth continues but the so-called mental growth is really a mental expansion depending on the integration of experience in a brain which already has the functional capacity of adult structure.

Dr. John E. Anderson, in his paper on *Research on the Young Child, A Retrospect and a Forecast*, maintained that within the last decade child study has undergone a radical change. A broader basis has been laid, technique and methods have been improved, and the cumulative knowledge from related fields has been made available.

The anthropologist, Dr. Aleš Hrdlička, called attention to the unique opportunities of Mooseheart for broad, continuous and cross-sectional studies of children of both sexes of non-selected normal types, which may eventually furnish standards for American children and raise the level of child study in general.

Vocational Adjustment at Mooseheart, a paper read by Dr. C. A. Prosser, referred to the technique of occupational training, the criteria of individual fitness for special types of work, adaptability to various occupations and to the conditions of modern industry.

Dr. Borden S. Veeder discussed *The Growing Child as a Problem in Pediatrics*. The cure of disease no longer occupies the centre of pediatrics, but rather the child itself as a growing and constantly changing organism. Emphasis is now placed on normal and wholesome development from the physical, mental, and emotional points of view. Pediatrics utilizes whatever new knowledge appears in the related fields of anatomy, pathology, psychology, nutrition. The latter is particularly important, since the problem of the effect of the diet of the infant of today upon the health and development of the same child five to ten years hence, is still awaiting solution.

A paper on *The Growing Child in the Family and Play Group* by Dr. E. W. Burgess, dealt with the normal child and its relation to the family and play group. He stressed the significance for the child's future life of the influences emanating first from the personal environment of the home, and later of the play group.

A paper on *The Psychology of the Growing Child*, by Dr. A. J. Carlson, recommended the following investigations at Mooseheart

owing to its special facilities: Optimum diet for optimum bodily and mental growth; optimum physical and mental activities for optimum growth; optimum diet and activity productive of optimum resistance to disease; studies on the primary bodily urges, that is, the analysis, training and control of hunger, appetite and sex urge; studies on the development and control of the normal emotions throughout childhood; controlled experimentation on the problem, how early in the life of the child can education by analysis and reasoning be advantageously substituted for education by dictation and memory.

Dr. Louise E. Stanley spoke on *The Importance of the Mooseheart Laboratory to a Nation-Wide Parent Education Program*, advocating that this program, already tentatively inaugurated, should in the public interest receive the widest support.

RUDOLPH M. BINDER.

FIRST INTERNATIONAL CONGRESS OF ELECTRO-RADIO-BIOLOGY.—The International Society of Radio-Biology announces that His Excellency Benito Mussolini on the favorable advice of the National Council of Research, has approved the initiative to call an International Congress of Electro-Radio-Biology. This First International Congress will take place from September 10 to 15, 1934, in the Doges Palace at Venice.

The Congress will be presided over by His Excellency the Marquis Guglielmo Marconi, President of the Royal Academy of Italy, President of the National Council of Research, State Senator; and by His Excellency, Count Giuseppe Volpi di Misurata, State Minister, State Senator.

The object of the Congress is to invite physicists, chemists, biologists, naturalists and physicians, for a discussion on biological actions of all radiations, in order to coordinate the respective investigations.

The biologist will learn from the physicist the theoretic and experimental basis of the physical researches on the vibratory and corpuscular phenomena. The physicist and the physico-chemist will learn from the biologist what are the influences that these phenomena have on cellular elements, complex tissues and on organic processes.

Moreover, the organizers of the Congress hope to determine a new radio-biological tendency of many present physical and biological investigations.

The holding of this Congress has aroused great and wide spread interest, as evidenced by the great adhesion received from many well-known scientists of every country; *viz.*:

Prof. Emil Abderhalden (Halle a S.); Alexandre Belak (Budapest); Rita Brunetti (Cagliari); Alexis Carrell (New York); A. Castaldi (Cagliari); Arthur A. Compton (Chicago); William D. Coolidge (Schenectady, N. Y.); D'Arsonval (Paris); Duc de Broglie (Paris); Friedrich Dessauer (Frankfurt a M.); V. Ducceschi (Padua); Carlo Foà (Milan); Albert Fischer (Copenhagen); Alexandre Gurwitsch (Leningrad); Otto Glasser (Cleveland, Ohio); Gola (Padua); C. P. Haskins (Schenectady, N. Y.); Herlitzka (Turin) R. Kienböck (Vienna); N. K. Koltzoff (Moscow); Svend Lomholt (Copenhagen); L. Lichtwitz (New York); J. Magrou (Paris); Robert A. Millikan (Pasadena, Calif.) D. G. Marinesco (Bucharest); E. Moreau (Clermont); G. A. Nadson (Leningrad); S. S. Nehru (Fatehpur, India); M. Nemenow (Leningrad); J. L. Pech (Montpellier); Ludwig Pincussen (Berlin); Pugno-Vanoni (Padua); V. Riviera (Pérouse); Claude Regaud (Paris); Angel Roffo (Buenos Aires); Sir C. V. Raman (Bangalore, India); O. Reche (Leipzig); Bruno Rossi (Padua); G. Viale (Gênes); S. Valentiner (Clausthal-Zeller); Otto Warburg (Berlin); R. W. Wood (Baltimore); etc.

The application of the radiations to medicine and therapy will not be discussed in this Congress.

The Congress intends to study the chemical and biological phenomena in respect to radiations.

For further information address the General Secretary of the Congress, Dr. Giocondo Protti, S. Gregorio 173, Venice (Italy).

THE AMERICAN COLLEGE OF PHYSICIANS 1935 MEETING.—The American College of Physicians will hold its Nineteenth Annual Clinical Session in Philadelphia, April 29–May 3, 1935.

Announcement of these dates is made particularly with a view not only of apprising physicians generally of the meeting, but also to prevent conflicting dates with other societies that are now arranging their 1935 meetings.

Dr. Jonathan C. Meakins of Montreal, Que., is President of the American College of Physicians, and will arrange the program of general sessions. Dr. Alfred Stengel, Vice President in charge of medical affairs of the University of Pennsylvania, has been ap-

pointed general chairman of local arrangements, and will be in charge of the program of clinics. Mr. E. R. Loveland, Executive Secretary, 133-135 S. 36th Street, Philadelphia, Pa., is in charge of general and business arrangements, and may be addressed concerning any feature of the forthcoming session.

AMERICAN CONGRESS OF PHYSICAL THERAPY.—The thirteenth annual scientific and clinical session of the American Congress of Physical Therapy will be held in Philadelphia at the Bellevue Stratford, September 10, 11, 12, 13, 1934.

This year's program will be especially noteworthy. Outstanding clinicians and teachers will present the results of the newer researches emphasizing short wave therapy, hyperpyrexia, light therapy, remedial exercise, massage and other interesting subjects.

On Wednesday evening, September 12, a joint session will be held with the Philadelphia County Medical Society.

Special features will be the scientific and technical exhibits and the small group conferences. The latter have been arranged for Tuesday morning. Every specialty of medicine and surgery will be represented. The technical application of physical measures will be demonstrated and the fundamentals emphasized. The general sessions will be taken up with symposia on cancer, arthritis, poliomyelitis, industrial surgery, etc.

Friday, September 14, has been set aside for hospital teaching clinics which will be held in the leading institutions of Philadelphia.

Physicians and their technicians, properly vouched for, are eligible to attend this very important Congress. For preliminary program, address American Congress of Physical Therapy, 30 North Michigan Avenue, Chicago, Illinois.

NATIONAL ASSOCIATION OF PRIVATE PSYCHIATRIC HOSPITALS.—The formation of the National Association of Private Psychiatric Hospitals was announced by Dr. John J. Kindred of New York, following the organization meeting held at the Waldorf Astoria Hotel, New York City, June 1, 1934.

The following officers were elected: Honorary President: Dr. Hubert Work; President: Dr. John Joseph Kindred; Vice-President: Dr. Thomas P. Prout; Assistant Secretary: Dr. Frank H.

Barnes. Dr. Percy C. Hickling and Dr. Walter Freeman, the original incorporators, were elected Honorary Vice-Presidents.

The purposes of the new Association, which has been incorporated under a Federal Charter in the District of Columbia, are as follows: The mutual protection of privately owned psychiatric hospitals; cooperation and unity of action in all policies affecting the interests of private psychiatric hospitals; to engage in the study of subjects pertaining to mental diseases and defects, including the care, treatment and promotion of the best interests of the insane, epileptic, feeble-minded and allied cases; to engage in, foster and develop research for the advancement of knowledge of such subjects; to publish such journals or other publications as may be desirable; and, in general, to do any and all things necessary and incidental to furthering the objects of the Association.

THE NEW YORK PSYCHOANALYTIC INSTITUTE.—The New York Psychoanalytic Institute offers the following extension courses during the academic year 1934-1935, beginning the first week in October 1934:

(1) **THE APPLICATION OF PSYCHOANALYSIS TO SOCIAL WORK**—15 sessions. An advanced course for executives in social work, experienced field workers, and visiting teachers of commensurate status. Approved for alertness credit by the New York State Education Department. *Leader:* Dr. I. T. Broadwin.

(2) **THE UTILIZATION OF PSYCHOANALYTIC VIEWPOINTS IN SOCIAL CASE WORK**—10 sessions. (Begins in January 1935.) An intermediate case discussion seminar for social workers. *Leader:* Dr. Adolph Stern.

(3) **PSYCHOANALYSIS IN MEDICINE**—15 lectures. An introductory clinical course for physicians. (Not a training course.) *Lecturers:* Drs. Daniels, Lehrman, Lorand, Meyer, Oberndorf.

(4) **PARENT-CHILD AND SIBLING RELATIONSHIPS** (With special reference to maternal over-protection, maternal rejection and sibling rivalry). 6 lectures. General course. *Lecturer:* Dr. David M. Levy.

(5) **POPULAR LECTURES ON PSYCHOANALYTIC TOPICS**—5 lectures. Open to the general public. (To be announced.)

For further information, apply to the Executive Director, the New York Psychoanalytic Institute, 324 West 86th Street, New York City.

MENTAL DEFECTIVES AND EPILEPTICS IN STATE INSTITUTIONS IN THE UNITED STATES.—The Federal Census Bureau has recently issued a bulletin giving the results of its annual censuses of state

institutions for mental defectives and epileptics for the years 1929 to 1932, inclusive. The report shows that on December 31, 1932, there were 81,589 patients in state institutions for mental defectives and epileptics in this country. In addition these institutions were supervising 10,951 patients on parole or temporarily absent. The first admissions to these institutions in 1932 numbered 10,676. Of these, 7636 were mentally defective but not epileptic, 773 were epileptic but not mentally defective, 1780 were both mentally defective and epileptic, 468 were neither mentally defective or epileptic and 19 were unclassified. The net increase of resident patients during the year 1932 was 4863.

The number of reporting institutions in 1932 was 75 comprising all of the state institutions for mental defectives and epileptics in the United States.

DR. WM. A. WHITE 1935 THOMAS W. SALMON MEMORIAL LECTURER.—The Thomas W. Salmon Memorial Committee of The New York Academy of Medicine, has announced the choice of Dr. William Alonson White, Superintendent of Saint Elizabeth's Hospital, Washington, D. C., as the 1935 Thomas W. Salmon Memorial lecturer.

Dr. White will deliver a series of three lectures on April 12, 19 and 26, 1935. His subjects will be

1. Psychiatry as a Medical Specialty.
2. The Social Significance of Psychiatry.
3. The General Implications of Psychiatric Thought.

MOSHER MEMORIAL.—In 1902, Pavilion F of the Albany Hospital was built for the care of psychiatric patients. Dr. J. Montgomery Mosher was the chief advocate and worker for the plan of having a psychiatric ward in a general hospital for the teaching of medical students and for the care of patients who might come from the general hospital and from the community. This ward has functioned well during the intervening years.

Recently, the Board of Governors of the Albany Hospital has spent a considerable sum of money in refurnishing, redecorating, and repairing the building. On May 12, 1934, Hospital Day, it was renamed the Mosher Memorial in honor of the late Dr. J. Montgomery Mosher who was the first physician in charge, a man who

devoted himself unstintingly to the cause of psychiatry and medicine in this community. The wards have now possibly the finest private rooms in the whole hospital. The surrounding grounds have been landscaped. A fine occupational therapy room has been provided adjacent to the Mosher Memorial, where patients may express themselves in various forms of work and art.

A portrait of Dr. Mosher is being hung in the solarium entrance to the Mosher Memorial.

Book Reviews.

PROCEEDINGS OF THE FIRST INTERNATIONAL CONGRESS ON MENTAL HYGIENE.

Edited by *Frankwood E. Williams, M. D.* (New York: The International Committee for Mental Hygiene, Inc., 1932.)

Everyone who is interested in the advancement of mental hygiene will wish to have the report on the "Proceedings of the First International Congress on Mental Hygiene" on their readily accessible book-shelves. This two volume compilation, which extends to 1650 pages, is the visible evidence of the tremendous undertaking which faced Dr. Williams and his colleagues in organizing the first International Conference. Here were assembled delegates from more than fifty countries who discussed every phase of mental hygiene as a scientific and social discipline, and set forth as well the peculiar problems and trends of development in their several countries. To select at random some of the topics which received major consideration one may note: Nervous and Mental Diseases as a Public Health Problem; the Rôle of the Psychiatric Hospital in Social Life; the Care of the Insane outside of Institutions; Mental Hygiene in Relation to Syphilis, to Alcohol, to Eugenics, to Genetics; Juvenile Delinquency; Personality and Character Development; Mental Defect; Mental Disabilities; Intelligence Testing and Vocational Guidance; Mental Hygiene and Industry. Indeed, the report constitutes a very revealing cross section of the best contemporary thought in the field of mental hygiene as a condition of social welfare.

A noteworthy feature of the work is the very elaborate index prepared by Miss E. Marion Pilpel, which with its detailed cross references, makes immediately available all of the information upon any topic which may have been covered in the forty-five major papers and the two hundred discussions relative to them. The report might be described as the *Encyclopædia Britannica* of its field as it affords something on nearly every conceivable question in this almost limitless field.

R. MACLACHLAN FRANKS.

A POINT SCALE OF PERFORMANCE TESTS (VOLUME II.—THE PROCESS OF STANDARDIZATION. By *Grace Arthur.* (New York: The Commonwealth Fund, 1933.)

This volume follows the earlier *Clinical Manual* which made available the author's Point Scale of Performance Tests. The methods used in developing the tests, the statistical basis of standardization, and some data indicating significant uses of performance material, are presented in a manner that should interest students of test construction and clinicians who are employing the scale. Two forms of the scale have been standardized, and the author is

now engaged upon the task of constructing and standardizing new tests that "will measure accurately the higher levels of ability," so that the predictive value of measures with this non-verbal material may be more adequately examined.

W. LINE,
University of Toronto.

AN ELEMENTARY PSYCHOLOGY OF THE ABNORMAL. By *W. B. Pillsbury*.
(New York: McGraw-Hill Book Co.)

This book is one of the "McGraw-Hill Publications in Psychology" series, the Consulting Editor of which is Professor J. F. Dashiell. Its purpose, as expressed in the preface, is "to give the layman and the college student an account of the aspects of the abnormal mental life that are likely to affect or interest them: . . . to show how the abnormal phenomena are related to the normal, and to point out the normal acts that may be explained by laws developed for the abnormal." From the point of view of teaching, its content is selected and presented in accordance with the needs and interests of college students as appraised by the author. It forms, therefore, an introductory text-book for classes in abnormal psychology.

As would be expected, Professor Pillsbury has gathered a great deal of material without prejudice concerning theories or systems. His presentation tends to follow an historical order, which serves to introduce a variety of points of view, and to emphasize the essential contribution of each. Where he is critical, he inclines towards a general conservatism, throughout which he endeavors to maintain the logic of the scientist and of the functional psychologist. There is no narrow enthusiasm for an extreme point of view, such as would involve the reader in useless controversy; and in many places he seems deliberately to avoid the more sensational phenomena and interpretations, lest they hinder the student from obtaining a sound perspective.

This means, of course, that some schools and theorists will regard the author's presentation grossly inadequate at particular points. The Adlerians, for example, will not be ready to endorse his account of their theory of the neuroses; nor will the Freudians take seriously his criticisms of their use of the term "unconscious." But introductory courses, particularly in this field, are likely to fulfil their function best by avoiding undue attention to discussions more suitable for scientific journals, and by concentrating upon facts and phenomena that open up an interesting and objective panorama. This, the reviewer feels, Professor Pillsbury has endeavored to do.

The content of the book includes a preliminary discussion of the connotation of the term "abnormal," and of the relationships between the abnormal and various practical fields. The historical approach leads to an interesting and comprehensive summary of the facts and theories of hypnotism, whence follows an account of hysteria as presented by Janet, and an indication of the main lines of development that led to the psychoanalytic movement. The chapters on "Theories of the Unconscious" and "Theoretical Interpretation of the Neuroses" are not particularly well named, since the content is

largely confined to descriptive phenomena, and systematic features are present only by implication. Phenomena of sleep, sex, and disturbances of speech are next related to mental pathology in a very clear and acceptable manner. The more serious mental disturbances are discussed under the chapter headings,—Circular Insanity, Dementia Præcox, Paranoia and Organic Psychoses; and concluding sections deal with Causes of Insanity, Feeble-mindedness, Genius and Insanity, and Mental Hygiene.

Like all text-books, particularly those of this somewhat eclectic, factual type, the value of the presentation is difficult to gauge. In the last analysis that value depends most upon the teacher who prescribes and uses the book. The expert, with a wealth of clinical experience to draw upon, will doubtless find this volume readily adaptable to his class-room needs. The student and the layman will find it most profitable only under conditions of guidance and elaboration such as the experienced clinician can offer.

W. LINE,

University of Toronto.

THIRTEEN YEARS OF SCIENTIFIC MEDICINE IN NORTHERN CAUCASUS. Edited by *Dr. I. L. Benkowitz*. Rostov-on-Don, U. S. S. R., 1934.

The Soviet régime was established in Northern Caucasus, in 1920. The book before us is a report, prepared by several authors, of the achievements in that region in the field of medical science and practice since that time.

In pre-war times there was meagre provision of hospitals, health resorts, and personnel for medical service. The World War, followed by revolution and by civil war, resulted in the almost complete disorganization of such provision as had existed under the czarist government.

Judging from the accounts furnished in this report it would seem that since the establishment of the new régime remarkable progress has been made in the work of every specialty in medicine, both quantitatively and qualitatively. There has been a development of medical education and research and a construction of hospitals, clinics, laboratories, and other facilities on such a scale that the status of medical science and practice in that region at the present time is not only far in advance of what it was in pre-war times, but would make a respectable showing in comparison with corresponding activities in western Europe and in this country.

Of special note are the researches in the physiology of the central nervous system which are being conducted under the direction of pupils of the Pavlov school; the active measures that have been organized for maternal and child health, including mental hygiene; and the particular attention that is being devoted to industrial hygiene.

A. J. ROSANOFF.

ACCIDENTS, NEUROSES AND COMPENSATION. By *James H. Huddleson, M. D.* With a Foreword by *J. Ramsay Hunt, M. D., Sc. D.* (Baltimore; Williams and Wilkins Company.)

This book represents a discussion of the traumatic neurosis from many different standpoints. The manner in which it is treated is entirely logical and systematic, starting with the historical background and ending with

treatment, compensation and prophylaxis. There is a very extensive bibliography and the writer is apparently familiar with all the important work that has been done on this subject. Most parts of the book represent a very thorough and satisfactory discussion of the subject involved. In general, however, it might be said that the book represents a little too much a compilation of the opinions of others without bringing in any one viewpoint.

The chapter on Etiologies presents a very interesting discussion of all the different causes that are given for the traumatic neuroses. The chapter on Treatment is perhaps the least satisfactory. The criticism is that it is given in too generalized and superficial a fashion. It is an excellent summary of the opinions of different men as regards the value of different types of treatment, but for one who is looking for specific directions as to how best to treat a given case it is somewhat disappointing. The reviewer's criticism is perhaps on the basis of demanding the impossible—that one could in any brief volume of this sort give practical and specific details concerning treatment.

In general, the book is clearly written, bringing out definitions and points in excellent fashion. There are occasional exceptions where sentences are somewhat involved and where the statements are vague and generalized. The author has attempted a difficult task, and on the whole has done quite well. As a summary of all that has been written on the subject the book is excellent and can be thoroughly recommended.

KARL M. BOWMAN.

THE PROBLEM OF CONCENTRATION IN NEUROSES. COLLECTED PAPERS FROM
THE BECHTEREW'S STATE INSTITUTE FOR THE STUDY OF THE BRAIN.
By *A. G. Panow*. (Leningrad 1: 88, 1933.)

This study is an elaboration of the old observations made by Bechterew, Sikorsky and others of the autonomic changes which take place during the process of concentration. The oldest studies, however, lacked the minute observations of the various manifestations during the process of concentration under various conditions. Panow made use of the neuro-galvanic reflex which has a close relationship to the manifestations of the autonomic nervous system. In addition he determined the stability of the process of concentration introducing extraneous elements such as distraction. He investigated systematically the nature of the vegetative reactivity, especially the respiratory and the galvanic during the process of written calculation. He paid particular attention to the relationship between the autonomic reactions and the quality, quantity and the flow of calculation under external handicap, such as intensive noise. In the majority of cases of hysteria there was instability in the processes of concentration during the period of external stimulation expressed in a decreased efficiency and a high galvanic reaction. The psychasthenics, on the other hand, showed a stable process of concentration, they responded very little to the auditory stimuli and showed a considerable galvanic reactivity. On the whole, the author feels that the process of concentration is a labile one and cannot be used for the purpose of evaluation

of the personality make-up without taking into consideration other factors, as it determines only a temporary phase of the tested individual.

J. NOTKIN.

EXPERIMENTAL INVESTIGATION IN SCHIZOPHRENIA. COLLECTED PAPERS FROM THE BECHTEREW'S STATE INSTITUTE FOR THE STUDY OF THE BRAIN. By R. Meyerowitch. (Leningrad 1:100, 1933.)

This study is an attempt at an experimental analysis of the fundamental symptoms in schizophrenia using the method of correlation of certain experimental results with the particularities in the clinical picture.

The autonomic reactivity, especially the respiratory and the galvanic reactions, were studied. In addition the entire behavior of the patient, his production and motor reactions were utilized as an index of his responses to various stimuli.

The patients were tested during a number of sittings. The following stimuli were used: touch, ticking of a watch, threat with pin prick, actual pin prick, command to count or to stop breathing, horn tooting, flashing of various colors, application of galvanic current. Altogether twenty schizophrenics were tested. Negativism, automatic obedience and autism were investigated. There was a lack, or at the best, only a weak expression of the motor and verbal responses under conditions when one would expect an active expression of these reactions. However, the concomitant vegetative reactions, such as the galvanic and respiratory, became more pronounced. The galvanic response was particularly pronounced during the state of negativism. The patient, for instance, would cease to count while his galvanic reaction would go up 30 to 90 mm. This state was accompanied by moderate respiratory changes. When a patient co-operated squeezing, for instance, the dynamometer voluntarily there was no particular response in the galvanic reaction. As an expression of a splitting between the respiratory and galvanic responses he mentions the reaction to a pin prick threat when the galvanic response was absent while the respiratory reaction was well expressed. It is interesting that the paranoid schizophrenics utilized the various tests performed on them in their delusional formations.

J. NOTKIN.

THE COMMON SENSE OF DRINKING. By Richard R. Peabody. (Boston: Little, Brown and Co.)

"Psychotherapeutic Procedure in the Treatment of Chronic Alcoholism," read by the author before the Harvard Psychological Society and published in the January, 1920, issue of *Mental Hygiene*, provides the basis for this work which promises to afford a practical approach through psychotherapy to the problem of chronic drinking. Uncontrollable alcoholism is viewed as an escape mechanism in which feelings of inferiority, incapacity and guilt as explained by the Adlerian School must be replaced by a new self-analysis and self-criticism of processes which have led to the disintegration of personality. There must also follow a revitalized desire based upon conscious understanding of all the elements required to become an abstainer. There is

no half-way. The patient must make total abstinence his goal. Then must follow a voluntary, rational and conscious effort to rid oneself of a force which will result in moral, spiritual and physical disintegration unless curbed.

The habit may be formed because of (a) inheritance resulting in the possession of a nervous system non-resistant to alcohol; (b) early environmental surroundings which have failed to establish the self-reliant attitude in facing reality—the patient must have a narcotic stimulant; (c) later environmental surroundings, severe competition in modern life, and the World War. Those who have insight and a sincere voluntary desire to get well may be re-educated.

The treatment consists of: (1) a mental analysis in which the patient is shown the fallaciousness of the system of evasive thinking he has pursued and which has led to fear and doubt complexes. Energy is then set free to enter constructive channels. (2) Relaxation and suggestion to remove the abnormal states of tension. (3) Suggestion; reawakening in the unconscious material which will assist in a rational and socially purposive conduct. (4) Positive control and re-adaptation of thought so as to facilitate the process of reintegration. (5) An organized attack upon the antagonistic and neutral habits. To do this, one must be continuously occupied and understand that he is doing something concrete rather than rationalizing about his problem. (6) Remedy of any organic disability which may be present. (7) Explanation of causes of failure in others and indication of possible pitfalls. (8) Employment of hobbies and other diversional outlets for stabilization and spirit. (9) Teaching the patient that the same powerful forces which have led to his decline may be used to re-establish a satisfying sense of self-respect which will re-adapt his personality to a more positive and secure level. A new self-evaluation will result which will assist in organizing the distorted energies upon a discernibly higher plane leading to more socialized living. The whole personality, thus balanced and reintegrated, will be effectively directed against the habit of chronic alcoholism.

JOHN EISELE DAVIS.

SEMILOGIE DU SOMMEIL, ESSAI DE NEUROLOGIE EXPLIQUÉE. By *Auguste Tournay*. (Paris: G. Doin & Cie, 1934.)

In this book, dedicated to the memory of Babinski, who inspired Tournay's thesis on sleep in 1909, the author gives an excellent description of the symptomatology of normal sleep in infant and adult.

As the subtitle indicates, he tries to remain as far as possible on a level of neurological explanation, and devotes considerable space to the interrelations of pyramidal and extra-pyramidal functions as indicators of cortical and subcortical control in the sleeping state.

The book is replete with references to the literature of all languages. The author thinks that future interest in sleep will revolve about its usefulness as a determiner of the state of the interrelations of cortical and subcortical activity. It is a book which may be profitably studied by everyone interested in neurophysiology in general, as well as in sleep.

WENDELL MUNCIE.

THE 1933 YEAR BOOK OF NEUROLOGY AND PSYCHIATRY. Edited by *Peter Bassoe, M.D.* and *Franklin G. Ebaugh, A.B., M.D.* (Chicago: The Year Book Publishers.)

The present issue of this well-known work of reference maintains its previous high standards. The division of editorship which has been the policy during the last three years, Dr. Bassoe handling the neurological literature and Dr. Ebaugh the psychiatric, has made possible more comprehensive surveys of these two enormous fields and has thus enhanced the value of the yearbook.

Bassoe calls especial attention to the new studies which have been reported on the Argyll Robertson pupil, the mapping of dermatomes, epilepsy and migraine, the treatment of head injuries, fever therapy, indications for sympathectomy, the St. Louis epidemic of encephalitis. Fifty-four of the 450 pages in the book are devoted to endocrine studies, reflecting the remarkable activity in this field.

Ebaugh points out that in psychiatry there is "a growing tendency to work with objective, demonstrable facts in an unprejudiced and self-critical manner. Fewer groups lay claim to holding the sole solution to the understanding of human nature and to the treatment of mental disorders. . . . There is less of a tendency to divide the individual into organs and systems and a more widespread acceptance on the concept that, in the practice of medicine, we are dealing with a person and personality functions. Attention is called to work in forensic problems, psychiatry in medical education, the integration of psychiatry with other branches of medicine. Ebaugh signalizes Gillespie's "Psychotherapy in General Practice" as in his opinion the best paper of the year.

The volume is provided with numerous illustrations and is well indexed, both by subjects and authors.

C. B. F.

A DOCTOR STUDIES CRIME. By *Perry M. Lichtenstein, M.D., LL.B.* (New York: D. van Nostrand Co., Inc. 1934.)

After learning on page 2 that the author is addressing himself to "the intelligent layman," it is disconcerting to discover on page 129 of this book that it is "prepared for professional as well as non-professional people." The reviewer had gained no other impression than that it is strictly a book for the public—and a not too critical or scientific-minded public. Mainly it is a discursive narrative based on the author's eighteen years experience as resident physician at the "Tombs," which as every one knows is the City Prison of Manhattan. Through this grim antique fortress with its sinister Bridge of Sighs have passed most of the notorious criminals who inevitably gravitate to the metropolis—many of them on their way to the execution chamber.

It cannot be said that the present work does justice to the opportunities offered by so rich a material. It is true that numerous cases are mentioned

throughout the text—we get glimpses of Lieutenant Charles Becker, Herman Rosenthal, Hans Schmidt, the "Mad Priest," "Legs" Diamond, Harry Thaw, David Lamar, the "Wolf of Wall Street" and others—but the descriptions are for the most part brief and disappointingly sketchy and afford the reader little insight into the actual individual problems of crime.

The chapter headings are as follows: The Prison Physician, Narcotic Addiction, Mental Defect and Delinquency, Moral Defect, Insanity and Crime, Psychopathic Inferiority, Probation, The Detention Prison, Court Procedure, The Penal Institution.

The author stresses the importance of the rôle which feeble-mindedness, moral defect and psychopathic inferiority play in the story of crime, and he urges that provision should be made for the detention of members of these classes displaying criminal tendencies, who under existing legislation are not certifiable and constitute a major social menace. The general mental level of Tombs' prisoners is reflected in the estimate that only one in twenty-six finished public school and that only one in thirty had a definite trade. The author's remarks concerning psychopaths are worth quoting: "They are practically irreformable and for them the science of psychiatry has thus far provided no definite treatment. In prison they instigate the revolts and jail breaks. Nor do they usually act by themselves. They evolve the plan and then direct others in doing the 'dirty work.' We shall never make appreciable progress in our effort to minimize crime until we turn our attention to this vast horde of mental cripples. In the past they have been overlooked and have become the 'repeaters' who have not alone filled our prisons but have cost this country millions on millions of dollars in losses to the public; in money spent to apprehend them; and in money spent to maintain them in prisons. An institution devoted to the study and treatment of such cases is as necessary as are our public schools, our hospitals and our prisons." This last sentence is worth italicizing.

The sterilization of mental defectives the author does not favor. His position is apparently based upon the erroneous assumption that sterilization means castration.

As a prophylactic it is optimistically suggested that "if every child were taught the Lord's Prayer, the Ten Commandments and the Constitution of the United States, and taught to respect them in his actions, we would have little crime." The author also assumes that "our inherent moral sense teaches us what is right and what is wrong," which is not quite in keeping with the findings of contemporary psychological investigation (*vide* Piaget).

C. B. F.

VIRGINIA STATE HOSPITALS FOR MENTAL PATIENTS. Report on Receiving System and Hospitalization Needs. Richmond 1934.

In this report, prepared at the request of the General Hospital Board, by the State Department of Public Welfare (Arthur W. James, Commissioner, Emily W. Dinwiddie, in charge of research and editorial work), are recorded

the efforts of a great commonwealth in dealing with the problems of mental disease and defect.

The study covers the receiving system and hospitalization needs of the three state hospitals for white patients, the hospital for colored mental cases, epileptics and defectives, and the colony for white epileptics and defectives. The conditions and methods prevailing in Virginia are compared with those in other states and countries. It indicates that the present ratio of hospitalized mental patients to total population of the state is more than four times that of fifty years ago. The population of Virginia is about two and a half millions, and the annual cost of care of its mental invalids, in spite of compulsory cuts during the depression, still amounts to one million and a half dollars. Lack of space and funds have necessarily restricted all of the hospitals and the colonies in the services which they should be able to render to the state.

The report discusses the cost to tax payers and the distress to patients and their relatives entailed by the present court proceedings and frequent gaol or almshouse detention preliminary to admission of mental patients to state hospitals. During the year 1932 to 1933 more than 11,000 patient days board in gaol was paid for such recognized mental patients. It strongly urges abolishing this procedure and the removal of discriminations against admission of patients on a voluntary or medical certificate basis in favor of court commitment as presently practised.

The report stresses the urgent need for increased accommodation. It points, for example, to a probable relationship between the inadequate provision for supervision or custody of mental defectives and the high illegitimacy rate and the large numbers of defectives in penal institutions. Between 3000 and 4000 illegitimate births are registered in Virginia each year and the rate is increasing, while the total birth rate is declining. The need of enlarged follow-up service, out-patient clinics and special services in the schools are duly emphasized.

Virginia enjoys the distinction of being the state in which a test case under its sterilization law was carried to the Supreme Court of the United States. The memorable ruling of this court in the judgment handed down by Mr. Justice Oliver Wendell Holmes established the constitutionality of sterilization laws in the United States. The report calls attention to the work which has been done under this law and advocates a wider use of sterilization among recidivists, delinquents, feeble-minded persons and other anti-social mental cases which cannot be institutionalized and are obviously unfit for parenthood.

The urgent need of preventive work is convincingly set forth in this report which points out that the bulk of the public funds, which now have to be expended in caring for mental disease and defect, is devoted to the late and least hopeful conditions instead of to the early stages of disease where it should be applied.

The Virginia report in making its various recommendations documents them with concrete illustrations from case histories. An appendix gives the details by counties of mental patients held in gaols during 1933. There is also

included an instructive summary of the state laws concerning the temporary detention of mental patients.

The committee pays tribute to the helpfulness and assistance of Dr. W. F. Drewry, Director of the Bureau of Mental Hygiene, and expresses its regret that his illness at the time of the completion of the study made it impossible to consult with him regarding the report in its entirety.

C. B. F.

GENEALOGY OF SEX. By Curt Thesing, M. D. Translated from the German by Eden and Cedar Paul. (New York: Emerson Books, Inc. 1934.)

Thirty years after Remy de Gourmont produced his *Physique de l'Amour* Curt Thesing gives us his *Genealogy of Sex*. De Gourmont was a man of letters, a critic and philosopher; Thesing is a medical man and a biologist. Both have written upon the same subject; indeed Thesing's book might be thought of as the scientific German companion-piece to the more belletristic French treatise of de Gourmont. The goal of de Gourmont was the emancipation of the mind by setting forth the phylogeny of physical love somewhat after the pattern by which Darwin had described the evolutionary succession of species. In a word de Gourmont was a pioneer in the dechristianizing of sex—a goal vigorously pursued in subsequent years by Briffault. Thesing achieves the same end by writing down dispassionately and in orderly array the biologic data of his own observation and knowledge relative to the sex life of man and other animals. He has no theory to prove; he merely draws conclusions from the facts. The *Physique de l'Amour* has been described as a defense of sensuality; the *Genealogy of Sex* is neither for the sensualist nor for the prude; both works are calculated to promote decency by justifying sensuality as a biological norm, stripping from it the perverted ecclesiastical meanings which bulk so largely in the western tradition in matters of sex.

The prototype of the conjugation of the sexes, Thesing conjectures—and cites supporting evidence—was the chance collision and transitory fusion of the bodies of primitive unicellular organisms in their random wanderings in search of food, the process in fact hardly differing from that of the ingestion of nutriment in these simple forms of life. But the biologic advantages of the mutual exchange of substance, providing the organisms concerned with a greater variety of transmissible characteristics, hence greater adaptability and survival value, led to repetition of these accidental encounters, with successive modifications and differentiations, until eventually there resulted the varieties of sex life in the several animal species as known to the biologist today.

This is the story Thesing unfolds, a fascinating story, stranger than fiction—"a biologic panorama" Jelliffe terms it in his introduction. Both typical and unusual examples from one end of the zoologic scale to the other are passed in review. In each case enough of the natural history of the organism is given for orientation, with a concise but complete, even detailed statement of the method of reproduction peculiar to the species.

We are initiated into the love mysteries of paramæcium, a fairly advanced type of protozoan, which by simple fission will produce in 20 days more than a million offspring. But the nucleus of paramæcium contains both male and female elements, the organism is therefore hermaphrodite; and at intervals, after many generations of asexual reproduction, actual pairing takes place with exchange of nuclear material by means of a temporary protoplasmic bridge. The history of paramæcium suggests that the primary object of conjugation is not reproduction, since the latter can occur without the former, but rather the enrichment of the hereditary equipment of the individual, thus enlarging the possibilities of variation.

A transition from hermaphroditism to sexual differentiation is furnished by vorticella in which occur dwarf forms predominatingly male along with the fully developed forms which are predominatingly female. When these curious creatures mate, "the dwarf vorticella attaches itself to the side of the female, the cell membrane disappears at the point of contact, and by degrees the male is completely absorbed into the body of the female," a refinement of female *volupté* not to be duplicated among higher forms. The tragic fate of the male however is variously exemplified as we advance along the evolutionary scale, the climax of female sadism being reached in the praying mantis who begins her connubial feast during the very act of consummation, devouring piecemeal her spouse who thus in his own person and at one and the same time supplies his wife with respect both to bed and board.

But although morphologically the trend is from asexual to unisexual or hermaphrodite types, and from these to the various forms of sexual dimorphism, "fundamentally, every organism that issues from a sexual act is in a sense hermaphrodite, for every male contains within his body a female, and every female contains within her body a male. That is to say, in every organism there are, primordially, latent the hereditary factors of both sexes. Every fertilized ovum has a hereditary equipment which might enable it to develop into a male or a female or a hermaphrodite adult."

This biologic fact helps us to understand the curious phenomenon of sex mutability, illustrated by the behavior of the sword-tailed minnow, cherished by aquarians. These little creatures are clearly differentiated into males and females, the decorative sword-tail being characteristic of the former alone. But the female of the species enjoys a compensatory advantage. After functioning as a normal mother to several generations of young her body undergoes a gradual transformation; her ovaries degenerate, the germinal epithelium becomes active and produces spermatozoa, a masculine sword-process develops in the caudal fin—in a word the female has become a complete male who seeks out a female, pairs with her and becomes now the father of additional generations.

Thus it appears that sex is not the fixed and final thing it was once assumed to be. "The determination of sex is not effected exclusively and once for all during the act of fertilization." Experiment has shown that external conditions during the period of growth, such as variations in temperature, or diet, exposure to sex hormones, location in stagnant or flowing water, etc., play a part in determining what sex form an organism shall take.

One of the most remarkable instances of hermaphrodite behavior is furnished by the edible snail, in which during mating each partner functions at the same time as both male and female.

The association of cruelty with love is exemplified in many animal species. The praying mantis has been referred to. The female spider likewise devours her mate, if not before then immediately after the conjugal act. The polyandrous habits of spiders Thesing attributes to the scarcity of males resulting from this connubial cannibalism. The male bee also pays with his life for a single favor of the queen, but after a different fashion. Mutilation of the male is an inevitable consequence of conjugation and he does not survive the nuptial flight. Among grasshoppers the cannibalistic tendency is self-directed. These creatures gnaw off their own legs, and sometimes carrying self-mutilation still further literally eat themselves to death.

The sex practices which in human beings are stigmatized as vices or perversions are all represented among other members of the animal kingdom. The common slug, a hermaphrodite organism, regularly indulges in a peculiar homosexual prelude to the act of fecundation. Domesticated animals offer further examples aplenty. Bestiality (mating with animals of different species) is likewise widely prevalent; frogs and toads offer perhaps the most flagrant examples. Pæderasty is observed in almost all classes of animals. The promiscuity of the female salmon is aided and abetted by the fisherman who waits at the spawning-place to deprive her of her mate. When this has occurred she immediately seeks another partner and lures male after male to the fatal net. The habits of those hedonistic connoisseurs the Greeks and Romans who combined feasting with venery are strikingly emulated, nay surpassed by a humble insect, the so-called robber-fly. The pond-snail by common habit sets the pattern of perversion *à trois* of which Catullus sings, and so *ad infinitum*.

The author deals with the sex life of "savages" largely on the basis of Malinowski's remarkable observations among the Trobriand Islanders. The exhaustive studies of Malinowski are carefully summarized in the present work. From earliest childhood the sex impulse among the Trobrianders is wholly unobstructed. The children are stretched upon no "Procrustes' bed of morality"; there are no prohibitions, no sermonizing. But as adolescence and maturity are reached certain conventions and tabus (*e. g.*, exogamy) are set up and scrupulously observed. The aberrations resulting from the "civilized" but "unnatural" sex codes of western nations are all but non-existent among these "primitives." With them such aberrations are not looked upon as vices or crimes or something pathological; they are not subject to punishment. They are merely unnecessary, ludicrous. Prostitution is unknown. The Trobrianders appear to be far better skilled in the *ars amoris* than we.

"Those whom we call 'savages' are not more 'savage' than we. Their sexual relations are certainly no more immoral than our own. . . . These children of nature obey the biological laws of nature more candidly and more unrestrainedly than we do. All the same, they follow much more scrupulously

than do civilized men and women the dictates of their own peculiar moral code."

This book, which is enlivened by many illustrations, is not only a storehouse of zoological amatory curiosa, it is a dependable outline of the phylogeny of sex, by tracing and illustrating the development of which, it throws a flood of light upon the manifestations normal and abnormal of this dominant function in man, and upon the disturbances which may result from its unwholesome use.

C. B. F.

ANNUAL REPORT OF THE SURGEON GENERAL OF THE PUBLIC HEALTH SERVICE
OF THE UNITED STATES FOR THE FISCAL YEAR 1933. (Washington: Government Printing Office.)

The tremendous significance of organized preventive medicine is strikingly exemplified in the succession of annual reports issued by the Surgeon General. From year to year general health conditions in most of the civilized countries of the world show steady improvement. Backward trends in health or increased incidence of disease are found in those areas where congested populations, a low degree of literacy and deficient public health facilities are the rule.

Certain health trends are best illustrated by figures. There were 75,000 cholera cases reported throughout the world in 1932 with 39,000 deaths (1931, 260,000 cases and 141,000 deaths). Most of these cases were reported from India. Smallpox, while less prevalent in 1932 than in 1931 in the United States and England, increased in British India where 26,900 deaths occurred from this disease in 1932 (19,000 deaths in 1931). Plague accounted for more than 38,000 deaths in India in 1932 (28,000 deaths in 1931).

In the United States "the general death rate for the year 1932 was the lowest ever recorded. Infant mortality and the death rates for tuberculosis and diphtheria and typhoid fever also reached new low records. There were no unusual widespread epidemics, and the principal increases in the death rates over rates for preceding years were for cancer, heart disease and other so-called degenerative diseases, the death rates of which have been increasing for years."

The findings of the Surgeon General with respect to the effect of the depression upon health are striking.

"Whatever influence distressing economic conditions may have had on the health of the people of the United States generally, unfavorable results are not yet apparent from an examination of crude death rates, the reports of cases of communicable diseases or deaths of infants." However, a detailed study of 1000 families in each of 10 communities indicated "higher sickness rates among the poor, particularly in the case of the more serious illnesses that caused inability to work or that confined the patient to bed. It also appears that those families who were moderately comfortable in 1929, but who had been in poor circumstances for two or three years had more sickness than those who had only recently become unemployed and poor."

The following table shows the decrease in death rate per 100,000 from several communicable diseases in 1932 as compared with 1900.

	1900	1932
Tuberculosis	201.9	61.3
Diphtheria	43.3	4.8
Typhoid fever	35.9	4.6

The decrease in infant mortality in recent years in the United States is equally noteworthy. Deaths during the first year of life were as follows:

1915, 1 of every 10	1930, 1 of every 15
1920, 1 " " 12	1931, 1 " " 16
1925, 1 " " 14	1932, 1 " " 17

The United States declining birth rate is shown in the following table indicating recorded births per 1000 population:

1915....25.1	1925....21.5	1931....17.8
1920....23.7	1930....18.9	1932....17.3

The Surgeon General's report reflects the tremendous amount of work devoted to preventing the introduction of diseases from abroad, and in preventing the spread of disease in interstate commerce. The continuous and extensive research activities dealing with public health problems are fully set forth.

In the Division of Mental Hygiene are discussed the continuing studies of the nature and treatment of drug addiction. The first Federal Narcotic Farm at Lexington, Kentucky, will be ready for the reception of inmates early in 1935.

During the year medical and psychiatric services, which had already been established in 10 federal penal and correctional institutions, were extended to include five others. The institutions in which these services are now provided are:

Federal penitentiaries.

Atlanta, Ga.
Leavenworth, Kansas.
Fort Leavenworth,
McNeil Island, Washington.
Lewisburg, Pa.

Reformatories.

Chillicothe, Ohio.
El Reno, Okla.

Gaols.

New York, N. Y.
New Orleans, La.
El Paso, Tex.
Milan, Mich.

Women's Prison.

Alderson, W. Va.

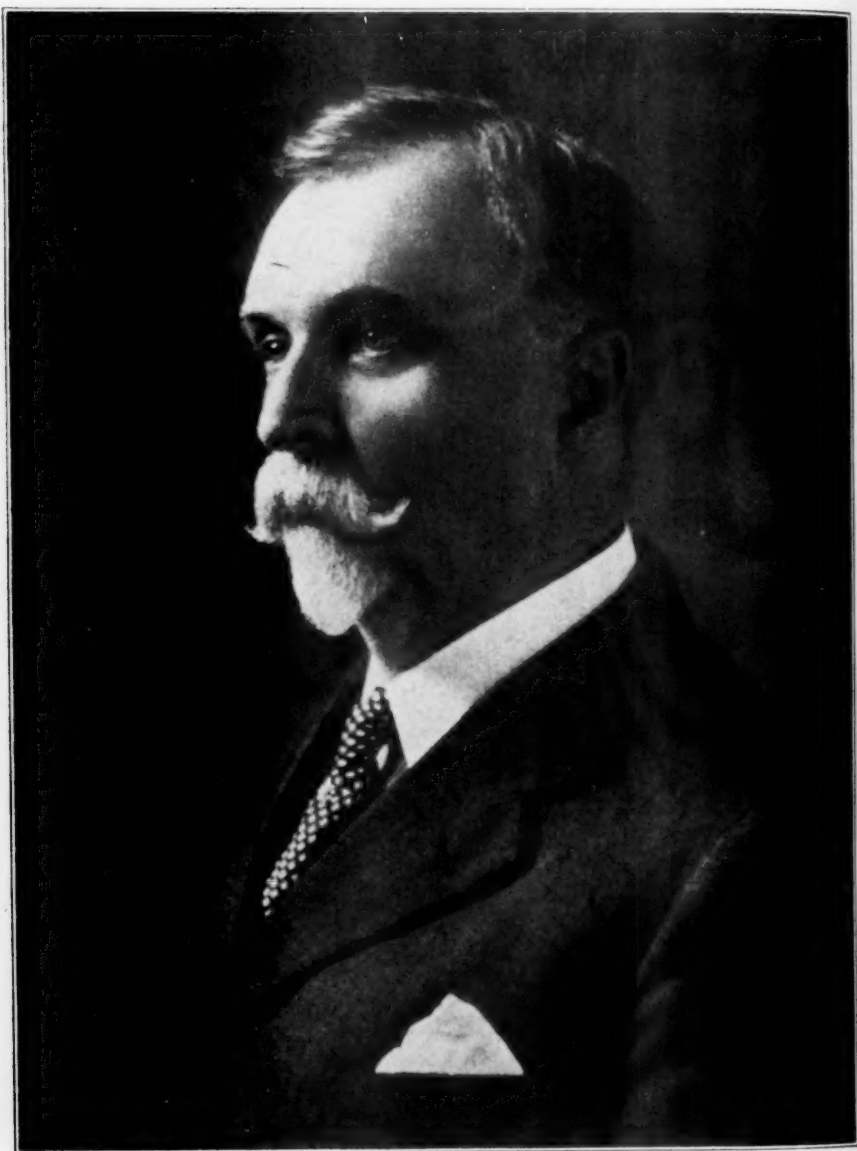
Prison Camps.

Fort Eustis, Va.
Petersburg, Va.

Hospital for defective delinquents.

Springfield, Mo.

C. B. F.



CHARLES WINFIELD PILGRIM, 1855-1934.

In Memoriam.

CHARLES W. PILGRIM.

The American psychiatric world was saddened on May 3, 1934, by the news of the passing of Dr. Charles Winfield Pilgrim. His death occurred at his home at Central Valley, N. Y., where he conducted a sanitarium for mental patients. For many years Dr. Pilgrim occupied an important place in the affairs of The American Psychiatric Association; was its Secretary from 1906 to 1909 and its President in 1911.

Dr. Pilgrim was born in Monroe, N. Y., March 27, 1855. After receiving his preliminary education at the Monroe Institute he began his medical career at the Bellevue Hospital Medical College, graduating in 1881; he served as interne in Bellevue Hospital for a year and a half. His medical education was later continued by special courses in Vienna, Munich and Berlin during the years 1885, 1886 and 1889.

Dr. Pilgrim's connection with psychiatry began in 1882 at the State Asylum for Insane Criminals in Auburn, N. Y. He was in 1884 transferred to what is now the Utica State Hospital and advanced through various grades until he attained the rank of acting superintendent. From this position in February, 1890, he was transferred to the superintendency of the Willard State Hospital where his abilities as a physician and organizer were demonstrated by notable improvements in the medical and administrative features of that institution. His work attracted the attention of the Managers of the Hudson River State Hospital at Poughkeepsie, N. Y., and in May, 1893, he was appointed superintendent of that institution.

In April, 1906, Governor Higgins asked Dr. Pilgrim to assume the duties of the Chairman of the State Commission in Lunacy. Dr. Pilgrim accepted with the understanding that he might return to the Hudson River State Hospital if at the end of the year he

wished to do so. Dr. Pilgrim preferred the active duty of the hospital, and contact with patients, to the duties of commissioner, and at the expiration of the year he returned to Poughkeepsie. In 1916, he was recalled to Albany by Governor Whitman and again served in the capacity of Chairman of the State Hospital Commission until he resigned in December, 1921. His administration was marked by the expansion of the system of mental clinics and the extension of social service and other forms of preventive work.

Dr. Pilgrim's resignation signalized the completion of forty years of state service. One hundred and thirty of the friends gave him a testimonial dinner in New York City on December 8, 1921.

Dr. Pilgrim was a Fellow of The American Psychiatric Association; a member and ex-president of the Medical Society of the County of Dutchess; a member of the Society of the Alumni of Bellevue Hospital; a Fellow of the New York Academy of Medicine and the Poughkeepsie Academy of Medicine; and a member of the New York Psychiatric Society. He was associate editor of the *AMERICAN JOURNAL OF INSANITY* from 1882 to 1890, and associate editor of the "Institutional Care of the Insane in the United States and Canada" which was published under the direction of Dr. Henry M. Hurd. Dr. Pilgrim kept alive his outside interests, serving as a director of banks and other business enterprises. For many years he was a vestryman in his church.

Throughout Dr. Pilgrim's long career as a physician and a psychiatrist, he always sought to elevate the standards of medical and nursing care. Both as superintendent and commissioner he constantly supported research work. He was vitally interested in the welfare of the patients, sought daily to increase their comforts, and he took great pride and pleasure in making their surroundings attractive. During his administration of Hudson River State Hospital, mechanical restraint was abolished. The improvement of the medical work of the institution was always one of his objectives. He stimulated his subordinates, whenever possible he found opportunities for their professional advancement, and he took great satisfaction in their progress. He was a splendid influence in New York State.

For several years Dr. Pilgrim's health had been a matter of great concern to his friends. While retaining his mental alertness, his

physical strength gradually failed. During this period his magnificent library was his major division. Fortunately he was confined to his bed only for a few days before the end. Dr. Pilgrim was a great psychiatric force in the United States and his death is regretted by a large circle of devoted friends. For gentleness, culture, and professional eminence he served as a model.

FREDERICK W. PARSONS.

EUGENIO TANZI, M. D.

By the death of Eugenio Tanzi, for many years professor of psychiatry and director of the psychiatric clinic at Florence, Italy and the psychiatric world in general have lost one of its outstanding representatives.

Dr. Tanzi died in January, 1934, at Salo on the charming slopes of the Lago di Garda to which he had retired some years ago. Those who may have read D. H. Lawrence's letters can gather somewhat of the beauty of this Italian lake, less written of than Como or Maggiore but possessing a unique charm and quite in keeping with the spirit of Dr. Tanzi.

Dr. Tanzi was nearly 80 years of age. He was born in Trieste in January, 1856. His parents had come from northern Italy, where in Milan he went through his secondary and high school studies. He then started medicine in the old Austrian University of Graz and then to Padua where he obtained his degree in 1880.

As Trieste, then as now a center of political strife between Italy and Austria, was too tempestuous, he settled at Reggio-Emilia as assistant psychiatrist at this well-established institution. From these contacts came some of his most fertile studies on paranoid states and constitutional psychopathies then emerging from the Lombroso school. This was in 1882-1883 and in 1884 he became docent at the Genoa clinic, following Enrico Morselli to Turin and thence back again to Genoa.

During this period he contributed widely to psychological studies. Hypnotism, association of ideas, hallucinatory phenomena, etc., were extensively investigated. In 1892 he worked for a time in experimental physiology with Luciani.

Rapidly from 1893 onward he made the round of professorships in psychiatry in the Italian clinics, Cagliari, Palermo, Modena and

finally he settled in Florence where his chief activities concentrated and where he remained active until his retirement.

The Florence Clinic soon showed the imprint of his personality and the younger psychiatrists flocked to Florence in a manner comparable to the migrations to Kraepelin at Munich.

In 1896 the *Rivista di Patologia Nervosa e Mentale* was founded by him and has remained the exponent of his and his assistants' chief researches. His *Trattato di Psichiatria* appeared in 1904. His *Problems on Psychiatry* with Lugaro, one of his assistants, soon followed and was translated into English. In 1912 he published a penetrating work on *Forensic Psychiatry*.

The present writer recalls with much pleasure a visit made to his Florence Clinic in company with Drs. William A. White, and Menas S. Gregory. Rossi, Lugaro and an active band of assistants with Tanzi made our stay most profitable.

We were charmed and impressed with his personality. Of slight and graceful build, his grace of manner and alertness of mind were striking and never to be forgotten.

He belonged to Florence and reflected the grace and beauty of this highly cultivated city. He had the inspiration of its history behind him and the treasures of mind that have endeared Florence to all.

SMITH ELY JELLIFFE.

HARRY BURCHARD BALLOU.

Harry Burchard Ballou, Assistant Superintendent of Mansfield State Training School and Hospital, Mansfield Depot, Connecticut, died suddenly on November 27, 1933, in a heart attack. Although in poor health for some time, he had continued at his work until the afternoon of his death.

Dr. Ballou was born November 5, 1876. He received his early education in Bristol High School and attended the New Hampton Business College, following that in the New Hampton Literary Institution. He was a graduate of Dartmouth and received his degree of medicine from the University of Minnesota in 1905. He was married but had no living children. He began his hospital experience in Middletown State Hospital, Middletown, N. Y., as an interne, a junior physician and finally assistant physician. Follow-

ing this, he was senior assistant physician at Westboro State Hospital from 1912 to 1918, and from 1918-1919 served as assistant superintendent. After a brief period in private practice, he became senior assistant physician at Mansfield State Training School and Hospital and then assistant superintendent which position he held from November 1920 to the time of his death. Dr. Ballou was a member of the local and national medical societies for the study of the feeble-minded and of psychiatry and a regular attendant at their meetings. He was of modest retiring disposition but at his work most enthusiastic, painstaking and constant; much beloved by his patients; an agreeable companion and a thoroughly likeable personality, unselfish, courteous, dependable and conscientious. I last saw him at the annual meeting in Boston last year and had the pleasure of being his seat-mate at one of the round-table conferences. Though obviously ill, he nevertheless showed a very keen interest in the discussion and with his usual enthusiasm made pertinent comments.

A. R. DIEFENDORF.